



## OLDER CANADIANS ON THE **M**OVE

The Expert Panel on the Transportation  
Needs of an Aging Population



Council of Canadian Academies  
Conseil des académies canadiennes

*Science Advice in the Public Interest*



## **OLDER CANADIANS ON THE MOVE**

**The Expert Panel on the Transportation Needs of an Aging Population**

## THE COUNCIL OF CANADIAN ACADEMIES

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**Notice:** The project that is the subject of this report was undertaken with the approval of the Board of Directors of the Council of Canadian Academies (CCA). Board members are drawn from the Royal Society of Canada (RSC), the Canadian Academy of Engineering (CAE), and the Canadian Academy of Health Sciences (CAHS), as well as from the general public. The members of the expert panel responsible for the report were selected by the CCA for their special competencies and with regard for appropriate balance.

This report was prepared for the Government of Canada in response to a request from the Minister of Transportation. Any opinions, findings, or conclusions expressed in this publication are those of the authors, the Expert Panel on the Transportation Needs of an Aging Population, and do not necessarily represent the views of their organizations of affiliation or employment, or the sponsoring organization, Transport Canada.

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## **Expert Panel on the Transportation Needs of an Aging Population**

Under the guidance of its Scientific Advisory Committee, Board of Directors, and Member Academies, the CCA assembled the Expert Panel on the Transportation Needs of an Aging Population to undertake this project. Each expert was selected for his or her expertise, experience, and demonstrated leadership in fields relevant to this project.

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The CCA also recognizes the important contribution to this assessment of Brian Flemming, C.M., Q.C., Senior Fellow, Van Horne Institute.

Over the course of its deliberations, the Panel sought assistance from many individuals and organizations that provided valuable information for consideration. Special thanks go to the following: Susan Clarke and J. Glendenning, Canadian Transportation Agency; Gina Sylvestre, University of Winnipeg; the Council of Canadians with Disabilities Transportation Committee; and the Canadian Longitudinal Study on Aging.



## Message from the Chair

Transportation is a vital part of the day-to-day lives of people in Canada. The benefits of an inclusive transportation system that allows for the seamless movement of everyone regardless of background, age, or ability would be significant and wide-reaching. Such a system would promote social equity, social inclusion, individual well-being, and facilitate new economic opportunities as greater numbers of people travel.

Older adults are an important part of Canadian society, but their diverse transportation needs are not always met in the current transportation system. They are also the fastest growing demographic in the country, expected to constitute nearly a quarter of the population by 2036. Demand for an inclusive Canadian transportation system that meets the needs of older adults is therefore only going to grow. By meeting the range of needs of older adults, the transportation system as a whole would better serve everyone.

Recognition of the importance of adapting the Canadian transportation system to ensure it meets the needs of an aging population led to the development of this report. Unlike predecessor reports that focus on disability, this report examines the transportation needs that accompany normal changes with age and includes older adults who do not have a disability. The Panel was charged with looking at how technology and innovation can be used to support this goal. The timing was fortuitous. Now is an ideal time to identify how Canada can move forward towards an inclusive transportation system, while the population is aging quickly, while there are changes being made to transportation and accessibility governance in Canada, and while transportation infrastructure investments are being made across the country. Panellists brought expertise from several disciplines and backgrounds, including engineering, gerontology, geriatric medicine, transportation policy, industry, and innovative technologies. Despite its members' diverse viewpoints, the Panel was able to come together to develop a consensus report that summarizes the evidence and identifies actions for moving forward.

I would like to express my personal gratitude to all the members of the Panel for their hard work and commitment to this project. The spirited discussions that took place over the course of the assessment benefited from the diversity of perspectives and led to a high-quality report. On behalf of the Panel, I would like to express thanks to the reviewers whose thoughtful critiques led to an improved report, and to the staff members at the Council of Canadian Academies for their hard work and responsiveness throughout the assessment. Thank you also to those who presented to the Panel.



**Neena Chappell, C.M., FRSC, FCAHS**, Chair,  
Expert Panel on the Transportation Needs of an Aging Population

## Message from the President and CEO

Older adults are the fastest growing demographic in Canada, and as this group continues to grow, so too does the demand for an inclusive transportation system. This is an opportune time to look at how Canada can develop such a system, given that the population is aging quickly, with more approaching that point in our lives every day. Looking at ongoing changes to transportation and accessibility governance is a smart start. An inclusive transportation system would allow for the seamless movement of all Canadians, with many potential benefits from enhancing individual well-being to promoting social equity and social inclusion.

To better understand the role of innovation and technology in adapting the Canadian transportation system to suit the needs of an aging population, Transport Canada identified an important topic for the Council of Canadian Academies (CCA) to study. We assembled a multidisciplinary panel of 13 experts with a range of expertise, experience, and demonstrated leadership in gerontology, geriatric medicine, innovation technologies, transportation engineering, and transportation operations. The resulting report, *Older Canadians on the Move*, recognizes the importance of adapting the Canadian transportation system to ensure it will meet the needs of an aging population, and explores mechanisms that enable improved inclusivity and integration. A careful read will also provide insight into a recognition of the emerging needs of a growing Canadian population in this geographically vast and increasingly interconnected country.

I would like to thank Dr. Neena L. Chappell, C.M., FRSC, FCAHS, and her fellow expert panellists, for their efforts to bring this project through to completion. The Board of Directors, its Scientific Advisory Committee, and the CCA's three founding Member Academies — the Royal Society of Canada, the Canadian Academy of Engineering, and the Canadian Academy of Health Sciences — all provided key guidance and input throughout the entire assessment process.

Finally, I would like to thank the Minister of Science, the Hon. Kirsty Duncan, who, on behalf of the Minister of Transport Canada, the Hon. Marc Garneau, referred this project to the CCA.



**Eric M. Meslin, PhD, FCAHS**

President and CEO, Council of Canadian Academies

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## Report Review

This report was reviewed in draft form by the individuals listed below — a group of reviewers selected by the Council of Canadian Academies (CCA) for their diverse perspectives, areas of expertise, and broad representation of academic, industrial, policy, and non-governmental organizations.

The reviewers assessed the objectivity and quality of the report. Their submissions — which will remain confidential — were considered in full by the Panel, and many of their suggestions were incorporated into the report. They were not asked to endorse the conclusions, nor did they see the final draft of the report before its release. Responsibility for the final content of this report rests entirely with the authoring Panel and the CCA.

The CCA wishes to thank the following individuals for their review of this report:

**Paul Côté**, General Manager, Montreal Regional Metropolitan Transit Authority (Montréal, QC)

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The report review procedure was monitored on behalf of the CCA's Board of Directors and Scientific Advisory Committee by **Eliot A. Phillipson, O.C., FCAHS**, Sir John and Lady Eaton Professor of Medicine Emeritus, University of Toronto; Former President and CEO, Canada Foundation for Innovation. The role of the peer review monitor is to ensure that the Panel gives full and fair consideration to the submissions of the report reviewers. The Board of the CCA authorizes public release of an expert panel report only after the peer review monitor confirms that the CCA's report review requirements have been satisfied. The CCA thanks Dr. Phillipson for his diligent contribution as peer review monitor.

## Executive Summary

Older adults form a large and important Canadian demographic. Currently, one in six people in Canada is 65 or older, and the rate of growth of this demographic is higher than any other population subgroup. Older adults are a diverse group with unique transportation needs and preferences that are not currently being met by the Canadian transportation system. Adapting this system for an aging population has benefits for all travellers and for the travel industry itself.

An inclusive transportation system allows seamless movement between locations and transportation modes (e.g., from home to car to train to plane to hotel) so that all people, regardless of background, age, or ability, can easily reach their desired destination from the moment they start planning their journey. An inclusive system supports social equity by providing universal access to transportation and enhances individual well-being. It also creates economic opportunities because more people are able to travel. Demand for an inclusive transportation system will only grow as the proportion of older adults in Canada continues to increase. Now is an ideal time to create such a system thanks to current infrastructure investments that offer opportunities for improvement, and to changes being made to transportation and accessibility governance.

Recognizing this opportune time, the Minister of Transport, on behalf of Transport Canada (the Sponsor), asked the Council of Canadian Academies (CCA) to provide an evidence-informed, authoritative assessment of how technology and innovation can improve the accessibility of the federal transportation system for older adults. Specifically, this assessment examines the following question (the charge):

*How can technology and innovation help the Canadian transportation system (under the legislative authority of Parliament) adapt to the needs of an aging population?*

The federal government has a central role to play in governing — and improving the accessibility of — the transportation system in Canada. The governance of air, rail, intercity bus, and some ferries falls under its jurisdiction, although their operations and funding occur in partnership with other orders of government, not-for-profit entities, and industry. Given Transport Canada's key role in providing direction for and governance over transportation, it is significant that the Sponsor chose to pose this question now, while it has the opportunity to drive the creation of an inclusive, age-friendly transportation system throughout Canada.

To address the charge, the CCA assembled a multidisciplinary panel of 13 experts (the Panel) from Canada and abroad. Panel members brought knowledge from several disciplines to the table, including transportation engineering, gerontology, geriatric medicine, transportation policy, and innovative technologies. Over the course of a year, the Panel met in person five times to refine its assessment of the important issues at hand. This report is a consensus document that draws on the Panel's expertise and available evidence from a range of sources.

### **The Panel's Approach**

From the outset, the Panel established three key perspectives to guide deliberations. First, the Panel emphasized that aging is a normal process that includes a variety of physical, psychological, cognitive, and social changes, which can affect the transportation needs and preferences of older adults. Therefore, the Panel extended the assessment beyond issues related to physical accessibility, although these remained important. Other areas, including health and well-being, social interaction and participation, independence, safety and security, and respect, are also key considerations when it comes to transportation and older adults.

Second, although the Panel focused its deliberations primarily on transportation systems under federal jurisdiction, it adopted a “door-through-door” view of transportation (which necessarily included provincial and municipal components), an approach supported by the Sponsor. This term highlights the importance of considering all stages of a journey: planning trips from one's home, moving to (and through) transport venues such as stations and terminals, riding in vehicles, and getting through the door of a chosen destination. A complete door-through-door journey may be “multimodal” if it uses different transportation vehicles — cars, buses, trains, planes, or ferries. The door-through-door perspective requires that the transportation system be examined in a holistic way, which considers the whole Canadian transportation system. Importantly, there are a range of actors involved in a complete journey, including different orders of government (federal, provincial and territorial, and municipal), and the transportation industry.

Lastly, the Panel chose to look at existing solutions as well as innovations that could help minimize the obstacles facing older adults using the transportation system. It examined innovations and practices beyond technology, such as updating service models, training and educating staff, adapting security and safety procedures, and examining the human-technology interface. Non-technological innovations and practices are especially important for factors beyond physical accessibility, such as ensuring older travellers feel comfortable, valued, and

respected. The Panel carried out its deliberations fully aware that the best opportunity may not be a new or flashy one, but a simple, existing solution that — if implemented — would have a significant impact on accessibility.

### **The Transportation Needs of Older Adults in Canada**

Older adults come from many backgrounds, and individuals age in different ways. In this report, the term *older adult* denotes a large age range (65+); people's physical, sensory, and cognitive abilities, along with their social contexts, often change significantly as they age from 65 to 75 to 85 and beyond, each of which can have an impact on travel. Traits among these various cohorts of older adults are not static, and transportation needs and preferences today may be different 25 years from now (e.g., cultural values and preferences could shift). Adults aged 65 or older therefore cannot be defined by any one set of traits, as they have diverse abilities, interests, and living situations; transportation needs vary accordingly. While people in Canada over the age of 65 tend to be healthier, more active, and wealthier today, many still live on small incomes and face challenges associated with having limited resources. The Panel also noted that Canada's geography and low population density contribute to unique transportation obstacles for older adults living in rural and remote regions.

Older adults, as with other age groups, take part in many kinds of transportation activities, including day-to-day trips (e.g., groceries, medical appointments, banking, social visits) and longer trips (e.g., vacations, family visits). Both types of trips are important. Notably, discretionary (i.e., non-essential) travel, such as visiting friends and family, reduces feelings of isolation and improves the health, social inclusion, and quality of life of older adults.

### **The Benefits of an Inclusive Transportation System**

The growing demographic of older travellers represents a large economic opportunity for the travel and tourism industry. Ensuring that the transportation system is inclusive for all travellers and accessible to all could enable more older adults to travel. In many ways, older adults are prime customers for the travel and tourism industry. Research suggests that they travel more often and spend more money on trips than other age groups. Retired travellers may have the opportunity to travel frequently, for long stretches, and outside peak times. They may also travel as part of a larger familial group (e.g., with children and grandchildren). Beyond the economic and individual benefits, an inclusive transportation system has many social benefits. These include the promotion of social equity and inclusion for everyone in Canada, regardless of age.



## **Obstacles Faced by Older Adults in the Transportation System and Opportunities to Overcome Them**

Older adults may face obstacles at any stage of a journey: planning the trip, travelling from home to the terminal/station, getting from the terminal/station to the transport vehicle, boarding and moving on board the transport vehicle, travelling between vehicles, and post-trip travelling to their chosen destination. Obstacles may be unique to a single stage of the journey, or may be encountered throughout, such as challenges related to wayfinding. They can stem from a range of sources: physical abilities and preferences related to technology, reduced hearing and vision, fatigue and stress, or a lack of connectivity (including web connectivity) among different modes of transport. Many of these obstacles apply to all types of travellers but may impact older travellers to a greater extent. One source of transportation obstacles particular to older adults is ageism, since stereotypes related to aging are often unchallenged and difficult to change. Ageism can lead to older adults being perceived as less competent or treated negatively. While the obstacles present in the transportation system are significant, the Panel also identified a number of practices which, when implemented, can support their minimization. These include changes related to customer service approaches, communication, infrastructure, and technology, among others.

## **Moving Forward**

While opportunities exist to help minimize some of the obstacles facing older travellers, integration of these practices in the transportation system is not a given. The Panel therefore looked beyond individual opportunities and identified broader mechanisms to make the Canadian transportation system more inclusive. Based on a review of knowledge and practices in transportation and other sectors, the Panel identified three pathways to help achieve this goal:

- advancing human and social resources;
- advancing technology and infrastructure; and
- advancing policy.

These pathways in turn support the implementation of solutions to address travel obstacles facing older adults in the Canadian transportation system; the development of new (and the improvement of existing) solutions; and the development of a culture of continuous improvement and adaptation to meet the needs of all travellers.

Intersectoral and interdisciplinary research and development and innovation (R&D and innovation) are an important component of each of the identified pathways, which are detailed below. R&D and innovation include not just the development of new technologies and other innovations, but also support

the testing and implementation of research-driven solutions in real-world settings and the evaluation of solutions in practice. Policy-specific R&D and innovation can also provide evidence to support effective policy development and uptake in the Canadian context. R&D and innovation that consider the human experience (e.g., user-centred approaches) in particular encourage the design of technologies, infrastructure, and training and education services that minimize travel obstacles faced by older adults. Along with continued R&D and innovation, an ongoing impact assessment that engages relevant stakeholders — including older adults — will ensure the transportation system can adapt and evolve to meet the needs and preferences of future generations.

### *Advancing Human and Social Resources*

Human interactions are a key part of the transportation experience for all travellers and may be of particular importance to older adults. Good customer service that meets the needs of travellers supports autonomy and independence. Targeted, standardized, and mandatory sector-wide inclusivity training, combined with ongoing monitoring of the efficacy and impact of training for users, may support inclusive service and assistance for older travellers. Additionally, initiatives that educate users about available services may improve travel experiences by ensuring people are aware of and able to use them (e.g., those related to health and accessibility). These may be particularly helpful in the trip planning stage because they provide travellers with the confidence to undertake a journey.

### *Advancing Technology and Infrastructure*

Many of the travel obstacles identified by the Panel relate to the design of transportation infrastructure. Consistently adopting the principles of inclusive design, which considers the range of human diversity in terms of age and ability, can help ensure that the built environment is better suited for everyone, including older adults. Importantly, inclusive design supports a big-picture approach by focusing on the accessibility of infrastructure as a whole as opposed to its individual components. Taking this approach from the start prevents the need to make modifications later or to create separate systems for people with different needs. Having said this, inclusive design can also involve modifications to existing infrastructure.

Technology is also opening the door to new opportunities in transportation infrastructure, while new innovations are providing better traveller experiences, both within terminals/stations and on board transport vehicles. The needs and preferences of older travellers should be considered during the development and implementation of digital technology. While some technological advances require no input from transportation system users (e.g., better scheduling of departure times resulting in fewer flight delays), others may require that

the traveller own a smartphone or tablet and have unlimited connectivity. It is important that future technological innovations not be a prerequisite for accessing the transportation system, in order to take into account those who do not use certain technologies (e.g., online booking).

### ***Advancing Policy***

Policy can help support the development of an inclusive Canadian transportation system that meets the needs of older adults. Now is an ideal time to look closely at policy, while the federal government is developing a long-term agenda for transportation and examining the current approach to transportation governance. As part of this process, it has the opportunity to reflect on which changes might help the Canadian transportation system adapt to better meet the needs of older adults. The Panel considered one important component of the federal government's review of transportation governance processes: the *Canada Transportation Act Review* (the Review). Several recommendations came out of the Review related to improving the accessibility of the transportation system. While the regulation recommendations of the Review remain open for comment, based on its members' collective expertise, the Panel notes that:

- Moving from federal *codes of practice* for accessibility to *regulations* may support a more inclusive transportation system.
- Requiring the Canadian Transportation Agency to report on the status of accessibility every three years could help ensure transparency with regard to accessibility elements, including best practices, compliance rates, and the number of complaints received.
- The remaining accessibility recommendations should be closely examined and their potential impacts on older travellers considered.

Other relevant activities currently underway include the modernization of the Canadian Transportation Agency's operations and the development of accessibility legislation. There is an opportunity to highlight the value of meeting the needs of older adults within this new legislation.

While the federal government and Transport Canada in particular have a central role in creating an inclusive transportation system through governance changes, the inclusion of non-federal government stakeholders in governance processes can support more effective transportation policy. Industry and relevant Crown corporations, for example, have an important role to play in improving the accessibility of the federal transportation system because private companies are the owners and operators of many of this system's key components, such as airlines. Companies often develop and/or implement changes intended to meet, and sometimes exceed, rulings, regulations, and codes of practice. Other stakeholders include not-for-profit and non-governmental organizations

that represent relevant groups, and provincial, territorial, and municipal governments. The inclusion of older adults themselves as transportation stakeholders is particularly important to ensure their needs and preferences are considered. A meaningful, intersectoral, and collaborative approach to developing regulations integrates the views and expertise of many stakeholders in the drafting process. Effective engagement processes focus on developing trust and respect among stakeholders so that, even if consensus is not reached, discussions can still inform the development of formal regulations.

One important and powerful lever held by the federal government is the provision of funding for transportation infrastructure and other initiatives. The federal government is therefore in a position to encourage the development of an age-friendly transportation system by tying infrastructure and other investments to projects that support inclusive, multimodal transportation. Funding requirements need not be limited to narrow accessibility provisions, but could support inclusive transportation on a more general scale. For example, the federal government has the opportunity to improve or develop transportation hubs that support intermodal travel. It can also use procurement to support the development of new technological or other innovations that promote inclusivity within the transportation system.

## **Conclusion**

Adapting the federal transportation system to meet the needs of older travellers will support seamless, multimodal, door-through-door travel that has benefits for everyone in Canada. These benefits include improved social equity and economic opportunities, since more people will be able to travel and visit from abroad. An inclusive transportation system should be based on collaboration among a number of stakeholders, including all orders of government, industry, and older travellers themselves. Understanding the needs and preferences of the growing population of older adults in Canada is important for achieving this goal, as is the creation of a transportation system able to adapt as these needs and preferences evolve. It is an ideal time for Canada to move forward and work towards a fully inclusive transportation system, while the federal government is engaged in initiatives to improve Canada's transportation infrastructure and is reviewing how transportation and accessibility are governed. The need for a transportation system that minimizes obstacles for older travellers is only going to grow. To reap maximum benefits, the time to act is now.

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## Glossary of Key Terms and Concepts

**Age-friendly:** Age-friendly initiatives are “accessible and responsive to the specific needs of older persons.” Cities, environments, or organizations can adopt an “active aging policy” defined as “optimizing opportunities for health, participation and security in order to enhance quality of life as people age.” Such a policy “acknowledges the importance of gender, earlier life experiences, and culture on how individuals age. It takes into account the biological, psychological, behavioural, economic, social and environmental factors that operate over the course of a person’s life to determine health and well-being in later years” (WHO, 2017d).

**Ageism:** “Ageism is defined as a negative or positive stereotype, prejudice and/or discrimination against (or to the advantage of) elderly people on the basis of their chronological age or on the basis of a perception of them of being ‘old’ or ‘elderly.’ Ageism can be implicit or explicit and can be expressed on a micro[individual], meso [group] or macro [national] level” (Iversen *et al.*, 2009).

**Aging:** A normal process that includes a variety of physical, cognitive, sensory, and social changes. This process varies among individuals. “Research continues to indicate a much more optimistic picture of the aging process than previously presented. There are increased efforts now to differentiate ‘normal’ aging from disease or pathology. It is clear that aging is not synonymous with illness or disease. True, certain aspects of the aging process make individuals more vulnerable to illness and disease but no pathology is inevitable with age” (Saxon *et al.*, 2014).

**Canadian transportation system:** Encompasses all possible modes of travel in Canada, including those in the federal transportation system. The federal transportation system includes air, rail, intercity bus, and interprovincial (or international) ferries.

**Disability:** “Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. Disability is thus not just a health problem. It is a complex phenomenon, reflecting the interaction between features of a person’s body and features of the society in which he or she lives. Overcoming the difficulties faced by people with disabilities requires interventions to remove environmental and social barriers” (WHO, 2017c).

**Door-through-door journey:** An integrated, seamless movement across the transportation network that allows people to plan trips from their home, move comfortably through their doors, through transport venues like stations and terminals, and finally through the door of their chosen destination. A complete door-through-door trip may encompass multiple segments using different transportation modes, a “multimodal” journey.



## **Selected Abbreviations and Acronyms Used in the Report**

**AENEAS:** Attaining Energy-Efficient Mobility in an Aging Society

**ACAA:** Air Carrier Access Act

**ACCESS Advisory Committee:** The Advisory Committee on Accessible Air Transportation

**CATSA:** Canadian Air Transport Security Authority

**CCD:** Council of Canadians with Disabilities

**CLSA:** Canadian Longitudinal Study on Aging

**CTA:** Canadian Transportation Agency

**DOT:** U.S. Department of Transportation

**ESDC:** Employment and Social Development Canada

**ICAO:** International Civil Aviation Organization

**ICC:** Inuit Circumpolar Council

**ICT:** Information and Communication Technologies

**IoT:** Internet of Things

**MaaS:** Mobility as a Service

**NAS:** National Airports System

**OECD:** Organisation for Economic Co-operation and Development

**R&D:** Research and Development

**TC:** Transport Canada

**TDC:** Transportation Development Centre

**TSA:** Transportation Security Administration

**TSB:** Transportation Safety Board of Canada



# 1

## **Introduction and Context**

- **Charge to the Panel**
- **Report Niche**
- **The Panel's View on Aging and Transportation**
- **Methodology and Approach**
- **Structure of the Report**

# 1 Introduction and Context

Adapting the Canadian transportation system for an aging population has benefits for all travellers. A transportation system that meets the complex and diverse needs of older adults is more inclusive and, by extension, also helps accommodate multiple groups. An inclusive transportation system would allow seamless movement between all modes (e.g., from home to car to train to plane to hotel) so that all people, regardless of background, age, or ability, can easily move from the start of a journey to their desired destination (door-through-door). Demand for an inclusive transportation system will only grow as the proportion of older adults in Canada continues to increase. This proportion relative to the total population is expected to rise from nearly one in six to nearly one in four by 2036 (StatCan, 2015c, 2015e, 2016c).

An inclusive system supports social equity by providing equal access to transportation while creating economic benefits as more people are given the opportunity to travel and enhance their well-being. Now is an ideal time to create such a system, while the Canadian population is aging quickly, while technology is altering how people travel, and while the federal government is engaged in investing in Canada's transportation infrastructure and is reviewing governance models with respect to accessible transportation. Achieving an inclusive transportation system entails collaboration among relevant federal departments, other orders of government, industries, and stakeholder groups, including older travellers themselves. Given its important role in providing governance for transportation, Transport Canada can be a leader in achieving this vision: an inclusive, age-friendly transportation system throughout Canada.

## 1.1 CHARGE TO THE PANEL

Recognizing the importance of ensuring the Canadian transportation system meets the needs of older adults, the Minister of Transport, on behalf of Transport Canada (the Sponsor), asked the Council of Canadian Academies (CCA) to provide an evidence-informed and authoritative assessment of the state of knowledge on the role of technology and innovation in improving the accessibility of the federal transportation system for older adults. Specifically, this assessment examines the following question and sub-questions:

*How can technology and innovation help the Canadian transportation system (under the legislative authority of Parliament) adapt to the needs of an aging population?*

- *What impact will the aging demographic have on the economics, social role, and physical design of the Canadian transportation system over the next 25 years? What is the current state of research on the safety, security, multimodal integration, service standards, and equipment design implications of an increasingly elderly travelling public, and where are the gaps in knowledge?*
- *What are the international trends and best practices for accommodating an aging population, including trends and best practices for measuring performance?*
- *Are there examples or case studies where new technologies and innovative solutions are being developed to accommodate increasing numbers of aging travellers, such as equipment, communications, business practices, processes, and training?*

To address the charge, the CCA assembled a multidisciplinary panel of 13 experts (the Panel) from Canada and abroad. Panel members brought knowledge from the disciplines of transportation engineering, gerontology, geriatric medicine, transportation policy, and innovative technologies. Each member served on the Panel as an informed individual rather than as a representative of a discipline, patron, organization, region, or particular set of values.

Over the course of approximately one year, the Panel met in person five times to refine its assessment of the issues. At the beginning of the assessment process, the Panel met with the Sponsor to acquire a full understanding of the charge and receive additional direction. At this meeting, the Panel confirmed with the Sponsor that, while the questions focused on the federal transportation system — that is, transportation relating to air, rail, intercity bus, and some ferries — it was important to take a “door-through-door” approach for this assessment. The Panel prefers the inclusive *door-through-door* term as it highlights the importance of having systems in place that allow people to plan trips from their home, move comfortably through their doors, through transport venues such as terminals and stations, and finally through the door of their chosen destination. This differs from a *door-to-door* approach, which does not focus on the parts of the journey that occur within the home or destination. Further, a complete door-through-door trip may encompass multiple segments using different vehicles or modes of transportation — a “multimodal” journey. The Sponsor agreed that a door-through-door approach is appropriate, and presented five additional questions intended to clarify the desired scope for the assessment. These questions were not intended to replace the existing charge above but rather to illuminate the key areas of focus for the Panel’s deliberations. These supporting questions are:

- *How can Transport Canada (TC) support integrated, seamless movement across the transportation network (door-through-door)<sup>1</sup>?*
- *What physical, design, economic, and social barriers limit the access of seniors to the national transportation system?*
- *Do people change the way they interact with the transportation system as they age? What impact does this have on modal choice?*
- *What impact (positive or negative) do new technologies have on the transportation experience of seniors?*
- *Which specific international and/or domestic innovations could be applied in the Canadian transportation context and what impact will these have on seniors?*

In this report, the Panel uses the term *Canadian transportation system* to encompass all possible modes encountered over the course of a trip. While the Sponsor agreed that the Panel should focus deliberations on modes of transportation under federal authority, they also stated all stages of a journey from beginning to end may be considered. In reality, ensuring access to the federal transportation network usually involves the use of transportation modes under provincial, territorial or municipal jurisdiction, and therefore the Sponsor agreed using the door-through-door approach was important.

The federal government's responsibilities in governing transportation in Canada are outlined in the *Canada Transportation Act*. Under the Act, the federal government has responsibility over air, rail, intercity bus, and interprovincial (or international) ferries (GC, 2015c). The declaration of the Act states:

[A] competitive, economic and efficient national transportation system that meets the highest practicable safety and security standards and contributes to a sustainable environment and makes the best use of all modes of transportation at the lowest total cost is essential to serve the needs of its users, advance the well-being of Canadians and enable competitiveness and economic growth in both urban and rural areas throughout Canada.

(GC, 2015c)

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1 Transport Canada used the term *curb-to-curb* in its charge but agreed with the Panel's preferred terminology and approach (*door-through-door*).

The declaration goes on to clarify that this objective will most likely be achieved when several criteria are met, including having a “transportation system [that] is accessible without undue obstacle to the mobility of persons, including persons with disabilities” (GC, 2015c). Importantly, the declaration specifically refers to both urban and rural Canada. As the Canadian population ages, a greater number of older adults will access the transportation system. It is therefore clear that the federal government has a responsibility to ensure the transportation system is capable of meeting the needs of this growing demographic across the country. The Act does not go so far as to lay out the specific standards and protections related to accessibility, but does empower the Canadian Transportation Agency to make regulations to eliminate unnecessary obstacles in the transportation network (GC, 2015c).

The Panel confirmed with the Sponsor that its deliberations should focus on ensuring the transportation system is accessible to all people as they age, since discrimination based on age is explicitly prohibited in the *Canadian Human Rights Act* (GC, 2014). Aging is a normal process that includes a variety of physical, cognitive, sensory, and social changes. It is often unfairly negatively portrayed, when in reality:

Research continues to indicate a much more optimistic picture of the aging process than previously presented. There are increased efforts now to differentiate “normal” aging from disease or pathology. It is clear that aging is not synonymous with illness or disease. True, certain aspects of the aging process make individuals more vulnerable to illness and disease but no pathology is inevitable with age.

(Saxon *et al.*, 2014)

For the assessment, the Panel chose to focus not on specific chronological ages or disability per se, but rather on older adults in general. Older adults have a wide range of travel needs and preferences relating to their respective physical, sensory, and cognitive abilities, their social contexts, as well as their income and geographical location. Older adults include those who are aging without the onset of any disability, those who are aging into disability, and those who are aging with disability. The Panel chose to adopt the World Health Organization’s definition of *disability*, which emphasizes that it “is a complex phenomenon reflecting the interaction between features of a person’s body and features of the society in which he or she lives” (WHO, 2017c) (see Glossary for full definition).

## 1.2 REPORT NICHE

While there are several existing reports related to transportation accessibility, this assessment seeks to fill important gaps in that literature. Reports on the topic of improving accessibility for people with limited mobility (UNDP, 2010; GC, 2015b) focus on physical accessibility. This is also discussed in the recent *Canada Transportation Act Review* (the Review), which provides targeted recommendations concerning the governance of accessibility in the federal transportation system (GC, 2015b). Few reports capture the larger social and cultural issues facing older adults, or other types of travel obstacles and facilitators, such as respect for passengers, encouraging independence and social participation, and addressing preferences or fears. Other reports underscore the importance of considering the preferences and range of abilities among older travellers, but their analyses concentrate on driving, with some discussion of the needs of pedestrians and limited discussion of federal modes of transportation such as air, rail, intercity buses, and ferries (e.g., OECD, 2001; TRB, 2004).

The attention to the personal vehicle is not surprising; it is the most common form of transportation among older adults in Canada and an important factor in their independence, well-being, and social participation. Such a focus, however, creates a knowledge gap with respect to the use of other modes of transportation by older adults. Furthermore, focus is often on so-called essential travel, such as getting groceries or going to medical appointments. While essential travel is just that, ensuring older adults have the ability to enjoy discretionary travel is also important — they should have the same ability to go on vacation or visit friends and family as the rest of the population. By explicitly looking at modes used for longer trips (e.g., intercity buses, planes, trains), the Panel hopes to ensure that all of the transportation needs and preferences of older adults are considered. Accessing the Canadian transportation system is the same whether travel is essential or discretionary, so the report does not make this distinction.

While the charge references technology and innovation, the Panel confirmed with the Sponsor that technology is only one means of improving the transportation system. Other emerging opportunities exist to improve inclusiveness and accessibility, including those related to the human-technology interface, changing service models, training and educating staff, and adapting security and safety procedures. These opportunities may be especially relevant for factors beyond physical accessibility, such as ensuring older travellers feel comfortable, safe, valued, and respected as passengers. In many cases the best option may not be new or flashy but rather a simple, existing solution that, if implemented, would have a significant impact on accessibility. The Panel therefore confirmed with the Sponsor that both new and existing opportunities should be considered.



Having a Canadian-specific assessment is important given this country's unique geography, vast size, low population density, and jurisdictional division of transportation control. This report also identifies knowledge gaps regarding accommodation and transportation needs among older adults particular to the Canadian context.

### **1.3 THE PANEL'S VIEW ON AGING AND TRANSPORTATION**

As with all age groups, older adults are a heterogeneous group, with a range of economic and language profiles, travel preferences, and physical, sensory, cognitive, and social abilities. Too often, the transportation needs of older adults are inappropriately equated with the transportation needs of people with physical disabilities (who comprise a diverse group as well). Some older travellers have disabilities, but most do not, and they often have other age-related characteristics that affect their transportation needs and preferences. Physical accessibility is only one dimension of the challenges and opportunities related to the needs of older adults. For example, disrupted trips may lead to high levels of stress and fatigue that affect older adults with cognitive or sensory limitations to a greater extent. Other important factors and characteristics must be considered, including health and well-being, social interaction and participation, independence, safety and security, and respect.

Throughout its deliberations, the Panel considered those experiencing the normal changes that accompany aging to be equal members of society who should be able to access the same transportation as everyone else, rather than as a special interest group that requires special accommodation. The Panel sought to avoid ageism, which is defined as “a negative or positive stereotype, prejudice and/or discrimination against (or to the advantage of) elderly people on the basis of their chronological age or on the basis of a perception of them of being ‘old’ or ‘elderly’”. Ageism can be implicit or explicit and can be expressed on a micro [individual], meso [group] or macro [national] level” (Iversen *et al.*, 2009). The definition reveals that ageism encompasses stereotypes, attitudes, and discrimination. Both types of ageism (positive and negative) are discriminatory. An example of negative ageism would be the incorrect assumption that older people are often computer-illiterate, while examples of positive ageism would be the incorrect assumptions that most older adults are wealthy or that few live in poverty. There are ethical and social costs of ageism, including the personal costs of demoralization, loss of self-esteem, inactivity, and physical and mental decline (Palmore, 1999). There are also economic costs associated with ignoring the productive and creative abilities of older adults who are pressured to retire, or are otherwise excluded. Social and cultural costs also exist when the wisdom, cultural resources, and social support of older cohorts are ignored.

## 1.4 METHODOLOGY AND APPROACH

The Panel's assessment did not include a systematic review of the literature, but rather is based on the identification and analysis of various sources of evidence as directed by the Panel. A spectrum of evidence was used to inform the report, from Panel expertise to published reports. Sources of evidence included:

- academic literature from peer-reviewed publications that explore changes associated with aging, the travel needs and preferences of older adults, and options to improve the accessibility of the transportation system (including promising practices);
- publicly available government information and statistics;
- media articles discussing obstacles to transportation and opportunities;
- and other grey literature<sup>2</sup> related to travel, older adults, and improving the accessibility of transportation.

The Panel identified evidence through an iterative process (used for many previous CCA assessments) and guided CCA staff to key literature and in the development of keyword-based searches of published literature. Where findings do not have a cited reference, the Panel's expertise was used as the source of evidence.

The Panel did not list every existing opportunity related to the transportation needs of older adults. Rather, it used members' collective expertise to identify opportunities supported by good evidence. The Panel also examined a number of important factors that must be considered before the adoption of new opportunities, and the importance of policy for adoption. Rushing to adopt a solution without consideration of its broader effects may cause unforeseen problems for users. Similarly, any solution should appeal to its target group, be it users or providers. The most innovative and potentially helpful technological (or other) advancements are not helpful if no one chooses to (or is able to) use them. For instance, a smartphone application (app) that aims to help people move through terminals will not be helpful to those who do not know about it, do not have smartphones, or are uncomfortable using apps. The best solutions take the preferences and abilities of their target user population into account. Thus, in addition to reviewing engineering and transportation research, demographic data related to older adults in Canada, and sources related to the physical, sensory, cognitive, and social changes associated with aging, the Panel also used social science research on the preferences and abilities of older adults with respect to technology and travel.

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2 *Grey literature* refers to various types of documents produced by government, academia, industry, and other organizations that are not published commercially or formally.

In order to represent the heterogeneity of older travellers in a meaningful and succinct way, the Panel elected to use personas to highlight challenges and opportunities associated with the journeys of older travellers. Personas are “detailed descriptions of imaginary people constructed out of well-understood, highly specified data about real people” (Pruitt & Adlin, 2010). The creation of personas is based on a set methodology that uses data and research to invent high-level representative people based on statistics to support product design (Pruitt & Adlin, 2010). The purpose of personas is not to represent 100% of a population, but rather to cover the traits of the vast majority of a user group — in this case, older adults who use the transportation system. The personas are introduced in Chapter 3 to illustrate the heterogeneity of older adults in terms of abilities, transportation needs, and the obstacles they believe they may encounter over the course of a journey. These personas are revisited in scenarios in Chapter 4 to illustrate how various innovations and practices could have a positive impact in real-world settings throughout a journey. In some cases, the various innovations and practices discussed in the scenarios are not yet in common use in the Canadian transportation system, but are illustrative of good practices that could be beneficial if implemented. All practices featured in the scenarios are discussed in the main text of Chapter 4. The Panel intends these personas and idealized scenarios to more clearly illustrate the positive impact that well-implemented solutions would have on older adults accessing the Canadian transportation system.

While the Panel considered the unique transportation needs of older adults living in remote or northern communities, particularly Indigenous Peoples, there is little research on the realities and complexities related to transportation in these regions; the Panel is therefore unable to present a full and fair account of the transportation needs of older adults in these communities. Additionally, Indigenous Peoples may face distinctive and significant challenges, which the Panel recognizes and acknowledges but can only allude to due to the current lack of data. Research attention is needed in this area in order to increase travel opportunities for Indigenous older adults.

A formal peer-review process was carried out to assure the quality and objectivity of the report. While every review comment was carefully considered by the Panel, not all were included in the final report. The review process led to the identification of new evidence that informed the Panel’s deliberations. Additionally, a member-checking exercise undertaken online (n=53) as well as a survey performed by WestJet and shared with the Panel (n=5,265) supported the Panel’s findings relating to the obstacles encountered by older adults in Canada over the course of a journey.

## **1.5 STRUCTURE OF THE REPORT**

The remainder of the report is in two distinct parts. The first part presents the background information needed to address the charge. This includes information on how transportation is governed in Canada, focusing on the role of the federal government, issues of accessibility, and how the approach to governance is shifting (Chapter 2). It also involves an examination of the older adult demographic in Canada, and the economic and social benefits that may arise from an inclusive transportation system that allows more people to travel (Chapter 3). In the second part, the Panel examines how Canada can achieve a transportation system that minimizes obstacles for older travellers. This includes a discussion of door-through-door journeys for older travellers, identifying obstacles that make accessing the Canadian transportation system challenging, and providing examples that help minimize those obstacles (Chapter 4). The Panel also describes three forward-thinking pathways to support adapting the Canadian transportation system to better meet the needs of an aging population (Chapter 5). The last chapter summarizes the report's key messages (Chapter 6).

# 2

## **Transportation Governance in Canada**

- **The Federal Government's Role in Transportation**
- **The Roles of Provincial, Territorial, and Municipal Governments in Transportation**
- **The Role of Industry Partners in Transportation Operations and Accessibility**
- **Summary**

## 2 Transportation Governance in Canada

### Key Considerations

- The federal government plays a central role in the Canadian transportation system. Its goal is to improve the accessibility of all modes of transportation under federal jurisdiction through new legislation and regulatory reform.
- An inclusive transportation system that meets the needs of older adults includes all stages of door-through-door journeys.
- The federal government has jurisdiction over national transportation modes: rail, air, intercity bus, and some ferries. Ensuring an inclusive transportation system therefore involves collaboration among several stakeholders, including transportation service providers and operators, all orders of government, and travellers themselves.

Federal, provincial, territorial, and municipal orders of government are collectively responsible for overseeing transportation in Canada. The federal government generally regulates transportation modes that cross national, provincial, or territorial boundaries, including air, rail, marine, and intercity bus. For the past several decades, the federal government has been reducing its operational role in the transportation sector (Section 2.1) but maintaining its policy role (Padova, 2005). Transport Canada (TC) and two independent government agencies — the Canadian Transportation Agency (CTA) and the Transportation Safety Board of Canada (TSB) — have different roles in developing and implementing federal transportation regulations, issuing operating certificates, resolving disputes, maintaining safety and security, and investigating accidents (TSB, 2016; CTA, 2017a). Additionally, the Canadian Air Transport Security Authority (CATSA) is responsible for effective and efficient screening of both air travellers and baggage (CATSA, n.d.-b). For the purposes of this report, the roles of TC and the CTA are most relevant.

TC develops regulations, including those related to accessibility and safety, and enforces safety regulations through certification requirements, audits, inspections, and surveillance activities. For example, TC establishes standards for the transportation of dangerous goods and marine security, inspects aircraft to ensure they are safe to fly, tests new vehicles, and investigates potential vehicle defects (TC, 2013). The CTA has two primary roles, acting as an arm's-length regulator and Canada's civil aeronautical authority, and as a quasi-judicial tribunal that accepts complaints from passengers with disabilities related to accessibility and air travellers (including, but not limited to, those with disabilities) (CTA, 2016c). In the latter role, the CTA acts as an adjudicator and carries out dispute

resolution formally or informally. Most complaints are resolved through the use of the CTA's mediation services. In cases where complainants request formal resolution, the CTA has the power to operate like a court (CTA, 2016d). As a secondary function and when requested to do so, it provides input to TC on proposed changes to regulations or policies (CTA, 2016e).

## **2.1 THE FEDERAL GOVERNMENT'S ROLE IN TRANSPORTATION**

To examine how the federal government can help make the Canadian transportation system more inclusive for older adults, and the levers it may use to encourage the transportation industry to support improvements, an understanding of its authority and role in overseeing transportation is necessary. This section provides an overview and history of how the modes of transportation under federal jurisdiction are governed and regulated in Canada, with a particular focus on governance related to accessibility and how this governance may be shifting. The section concludes with a brief discussion of the role the federal government plays in encouraging tourism throughout Canada.

### **2.1.1 Transportation Modes Under Federal Jurisdiction**

#### **Air**

Canada's current air transportation system has been shaped by gradual deregulation and privatization. Since the full privatization of Air Canada in 1989 (Oum *et al.*, 1991), the federal government has drastically reduced its operational role in air transportation (Padova, 2005). Although the federal government still owns and operates a number of smaller airports (TC, 2010), all nationally significant airports (i.e., those serving provincial and territorial capitals, and those serving more than 200,000 passengers per year) are managed and operated by private airport authorities. Canada has 26 large, private airports constituting its National Airports System (NAS) (TC, 2010). Under the *National Airports Policy* (1994), the federal government retains ownership of the land and buildings for NAS airports, while local, not-for-profit airport authorities pay rent in order to use them. The NAS operates terminals and are therefore important partners in Canadian air travel. Currently, the federal government remains responsible for the regulation, safety, and security of airports and air carriers (Padova, 2005). One of its remaining operational activities is providing passenger and baggage screening services through CATSA, which was established in response to the events of September 11, 2001 (CATSA, n.d.-b).

While the federal government has decreased its operational role, it still has regulatory roles related to air travel. For instance, the CTA administers accessibility standards for airports and air carriers and monitors compliance to ensure that undue obstacles for people with disabilities are removed (CTA, 2016f). This includes using enforcement officers to regularly visit airports and produce compliance reports (CTA, 2015a). The vast majority of the complaints received by the CTA each year relate to airlines and air travel (CTA, 2015c).

## Rail

Railways played an important role in Canada's history because they provided a means for the transportation of goods and people across the country's vast geographical territory (CTA, 2015d). Canada's passenger rail services are primarily the responsibility of VIA Rail Canada, a Crown corporation. Unlike the leasing approach of airport land and infrastructure, railway companies generally own the land, infrastructure, and equipment required for their operations (Padova, 2005).

One of TC's roles in Canada's railway system is to regulate safety (Padova, 2005), which has been an area of focus for the federal government in recent years. A range of actions have been implemented to meet this goal. These include changes to the regulatory regime to improve the safety of grade crossings, clarity on safety management requirements for rail companies, and new mechanisms (i.e., fines) to encourage compliance (TC, 2016d). The first accessibility code for aircraft was introduced in 1996, and in 1998, the CTA introduced a code of practice<sup>3</sup> for passenger rail car accessibility (Section 2.1.2) that includes requirements for services and equipment provided to passengers with disabilities (CTA, 1998, 2015d). Fewer complaints are received by the CTA in relation to rail accessibility than to air accessibility (CTA, 2015c), however, significantly more people in Canada travel by air.

## Marine

Of the two types of passenger vessels most relevant to this report — ferries and cruise ships — only ferries are subject to federal accessibility regulations. As with airplanes and passenger rail cars, there is a code of practice for ferry accessibility, although it only applies to ferries that cross provincial, territorial, or national boundaries (CTA, 2014a). Similarly, the code of practice for terminal/station accessibility officially applies to operators of ferry, air, and

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3 A *code of practice* is a voluntary commitment that is agreed to by one or more individuals or stakeholders.



rail terminals/stations, with a note that other terminal/station operators are “encouraged to implement its provisions” (CTA, 2007). It is rare for the CTA to receive complaints related to marine travel (CTA, 2015c).

### Intercity Bus

The operation of intercity buses is regulated by TC, which administers the *Motor Vehicle Transport Act* (GC, 2006). In the mid-1990s, TC and the bus industry collaborated to develop the *Intercity Bus Code of Practice* (TC, 2011; Greyhound, 2016b), which represents “a voluntary commitment by intercity bus service operators to serve people with disabilities in a safe and dignified manner” (TC, 2016e). Unlike Canada’s other accessibility-related transportation codes, it is administered by TC (GC, 2015b). It is rare for the CTA to receive complaints related to intercity buses (CTA, 2015c).

### 2.1.2 Governing Accessibility in the Transportation System

In general, the federally governed part of the Canadian transportation system is owned and operated by private companies (e.g., Air Canada, Greyhound Canada) or by arm’s-length Crown corporations (e.g., VIA Rail Canada). The federal government does not play an active role in the day-to-day operations of air, rail, marine, or intercity bus operations (Padova, 2005), but it does help ensure the accessibility of the transportation system through regulations or codes of practice that dictate minimum standards to ensure access (CTA, 2007). The Appendix contains a review of the differences and similarities in accessibility standards between Canada, the United States, and the European Union.

Accessibility is important to people in Canada. In an online Canadian survey of over 1,500 adults, 90% of respondents agreed that doing “whatever we can to ensure everyone can fully participate [in society]” is a high priority, while 91% agreed that accessibility is a human right (Angus Reid Institute, 2015). Furthermore, 51% of respondents noted there is “huge” or “a lot of” room to improve transportation for those with physical disabilities, with 17% identifying accessibility as one of the top two important areas to improve (Angus Reid Institute, 2015). While rules and regulations in Canada are generally believed to ensure accessibility for those with disabilities, many standards benefit the entire population across age groups, such as making signage legible and easy to locate.

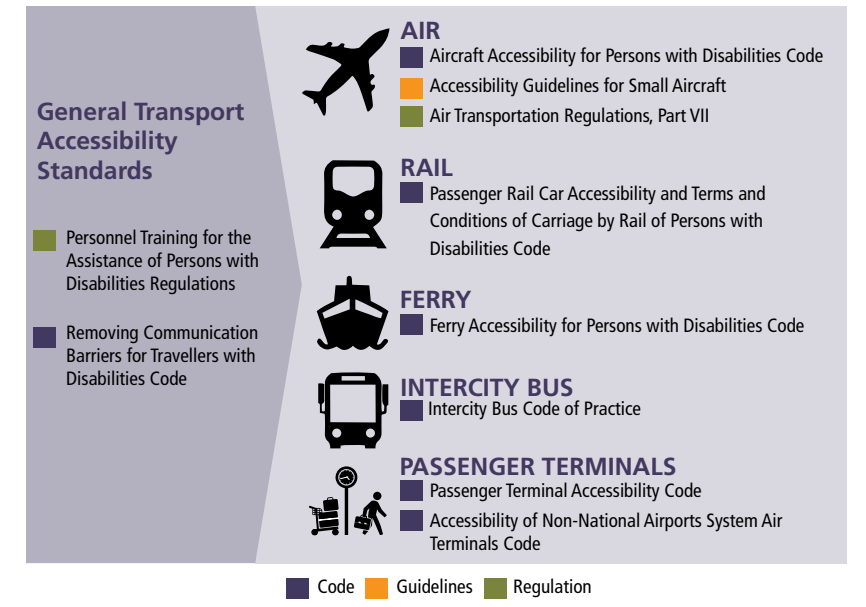
Discrimination based on disability is explicitly prohibited in the *Canadian Human Rights Act* (GC, 2014). Furthermore, accessibility within the federal transportation system is protected by numerous government statutes and regulations. Some of these protections are legally binding accessible transport regulations developed as a result of authority provided under an act, and therefore administered

under the legislative authority of Parliament (TC, 2016c). Specifically, the right to accessible transport is laid out in the *Canada Transportation Act*, which states that the CTA has the authority to “make regulations for the purpose of eliminating undue obstacles in the transportation network under the legislative authority of Parliament to the mobility of persons with disabilities” (GC, 2015c). The Act does not go so far as to specify standards and protections related to accessibility, but it does empower the CTA to make regulations that eliminate unnecessary obstacles in the transportation network (GC, 2015c).

In the 1990s, the CTA (then the National Transportation Agency) introduced two specific sets of regulations related to accessibility: the *Air Transportation Regulations* (which includes a section on accessibility) in 1994, and the *Personnel Training for the Assistance of Persons with Disabilities Regulations* in 1995 (GC, 2015b). The former applies to all aircraft operated by Canadian carriers that transport 30 or more passengers, whereas the latter applies to all personnel who work in the federal transportation network. The remaining framework for federal transportation accessibility is enshrined in codes of practice (GC, 2010).

In consultation with transportation service providers and persons with disabilities, the CTA has developed six codes of practice (GC, 2015b) (Figure 2.1). This includes codes related to accessibility for persons with disabilities for aircraft, passenger rail, ferries, and passenger terminals. It also includes a communications code of practice that applies to all modes, which is particularly relevant for travellers with visual or auditory limitations. The code for intercity buses is administered by TC rather than the CTA. The use of codes, as opposed to regulations, was “in keeping with the government’s policy at the time to effect change through non-regulatory measures” (GC, 2015b). Complicating matters further, while these codes are voluntary, the Supreme Court has ruled they can, in some cases, be viewed as self-imposed regulations (SCC, 2007). The full list of accessibility-related codes, guidelines, and regulations administered by the CTA and TC is illustrated in Figure 2.1. Importantly, they apply to both the accessibility of vehicles themselves (e.g., planes, railcars) as well as supporting infrastructure and services (e.g., terminals/stations, booking) (GC, 2015b). Ensuring accessibility for those with disabilities has benefits for everyone, including older travellers, but other issues related to normal aging are not addressed in these codes and regulations.

The CTA accepts complaints related to lack of accessibility in the federal transportation system as a result of a disability or health condition. Complaints received by the CTA can lead to policy changes, refunds, and/or compensation for expenses (CTA, 2015c). The CTA is currently not empowered to award compensation for pain, suffering, or loss of income, and decisions are made on a



**Figure 2.1**  
**Codes, Guidelines, and Regulations Related to Accessibility in the Federal Transportation System**

The accessibility of the federal transportation system (air, rail, intercity bus, and some ferries) in Canada is governed by a range of codes (purple), guidelines (orange), and regulations (green). Codes and guidelines are voluntary, while regulations are not. Some of these standards apply to the entire system while others are specific to terminals or one mode only.

case-by-case basis and affect only the targeted service provider (CTA, 2015c; GC, 2015b). For example, when the CTA issued the one-person-one-fare decision<sup>4</sup> or domestic flights on Air Canada and WestJet based on a dispute lodged in part by the Council of Canadians with Disabilities (CCD), the decision did not extend to other domestic or international carriers (CCD, 2014). Nor does the CTA have legal enforcement powers related to codes of practice, unlike similar agencies in other jurisdictions (e.g., United States, United Kingdom) where accessibility rules are legally enforceable regulations (Baker, 2006). The CTA does have enforcement officers who actively monitor compliance with codes of practices, but they have no power to legally enforce them. The CCD has identified the absence of legal enforcement in Canada as a contributing factor to the systemic obstacles that remain in place in the federal transportation system (CCD, 2014). These challenges are mitigated in the United States by models

4 The one-person-one-fare decision states that carriers may not charge more than one fare if a person requires more than one seat (either for themselves or for an attendant they need for personal care or flight safety) as a result of a disability.

such as the *Air Carrier Access Act* (ACAA), which has a “Complaint Resolution Official” mechanism to resolve problems at the carrier level and an enforcement mechanism that allows the U.S. Department of Transportation to issue fines to airlines for not complying with ACAA requirements (Ashby, 2015).

### The Approach to Transportation Accessibility Governance in Canada Is Evolving

In 2014–2015, the *Canada Transportation Act* was reviewed to ensure it “serve(s) Canada’s current and future needs” (GC, 2016a). The *Canada Transportation Act Review* (the Review) was tabled in Parliament in early 2016 and included a section on access and accessibility (GC, 2015b). The Review includes six targeted recommendations related to accessibility regulations (Box 2.1). These recommendations, if adopted, would significantly change how the accessibility of federal transportation is governed in Canada. In the Panel’s view, these changes could provide the government with greater authority and leverage to ensure accessibility in the federal transportation system.

In the context of this report and in terms of governance of transport accessibility, the most significant of these recommendations is Recommendation 3, which states Canada should replace voluntary accessibility codes with formal regulations. This change would bring Canada in line with the European Union, the United States, and Australia. According to the Review, “unless rights and standards are enshrined in legislation, Canada will continue to lag behind other countries in the regulation of accessibility” (GC, 2015b).

Another important recommendation is Recommendation 2, which urges Canada to incorporate a formal definition of *disability* into the *Canada Transportation Act*, similar to what has been adopted in the United States, the European Union, and Australia (EU, 2006; DOJ, 2009; Australian Government, 2016). This omission has led to less clarity for both service providers and travellers, especially related to so-called grey area disabilities (e.g., afflictions such as allergies that are not traditionally understood as disabilities) (GC, 2015b).

Overall, implementation of the Review’s recommendations would expand the CTA’s powers over accessibility issues. Notably, the CTA would have authority over accessibility issues for all modes of transport under federal jurisdiction, gain the authority to issue judgements that apply to all relevant service providers as a whole (as opposed to only the service provider targeted in the complaint), and have the ability to address systemic issues even when there has not been a formal complaint lodged.

**Box 2.1****Excerpt from the Canada Transportation Act Review:  
Access/Accessibility Recommendations**

1. The Review recommends that the Government of Canada amend Section 5 of the *Canada Transportation Act* (the National Transportation Policy) to reflect “access” for all, including persons with disabilities, and to better align with foreign jurisdictions.
2. The Review recommends that the Government of Canada incorporate a definition of disability into the *Canada Transportation Act* (including reference to the three determinants of disability in the World Health Organization’s International Classification of Functioning, Disability and Health model), to bring clarity to the legislation.
3. The Review recommends that the Government of Canada convert the Codes of Practice for Accessibility to Regulations, and that the Intercity Bus Code be transferred to, and administered by, the Agency [CTA].
4. The Review recommends that the Canadian Transportation Agency be given exclusive jurisdiction over disability-related cases in the federal transportation network, including the ability to award compensation for pain and suffering, up to a prescribed limit.
5. The Review recommends that the Canadian Transportation Agency be given the authority to address systemic issues, including the authority to investigate accessibility matters on its own motion and issue general orders.
6. The Review recommends that the Canadian Transportation Agency report every three years on the status of accessibility through the use of a Score Card, which would include an overall assessment of various accessibility elements, noting best practices, status of compliance, the number of complaints, and any highlights or comments.

(GC, 2015b)

The federal government is developing a long-term agenda for transportation in Canada following the release of the Review. In November 2016, the Minister of Transportation publicly outlined the government’s strategy, entitled *Transportation 2030: A Strategic Plan for the Future of Transportation in Canada* (GC, 2016b; TC, 2016b). This strategy was informed by a consultation process and the findings of the Review, and it includes the Minister’s commitment to several activities that will impact the transportation system as it pertains to older adults. Most notably, the government is looking to “support greater choice, better service, lower costs, and new rights for travellers” (GC, 2016b). In the summer of 2017, the Minister of Transportation announced the *Passenger Bill of Rights* as part of a proposed amendment to the *Canada Transportation Act* (Rabson, 2017).

The bill would transfer regulatory powers to the CTA and potentially prevent airlines from bumping unwilling passengers, introduce minimum compensation levels for those who are bumped voluntarily, require compensation for lost or damaged bags, and require airlines to provide details about what they will do for customers who are delayed as a result of something within the airlines' control (Rabson, 2017). Additionally, the CTA is now making changes to modernize its operations. This includes an initiative to review and update all existing regulations and codes of practice over which it has responsibility (CTA, 2016b). Some of the fundamental questions the CTA is examining relate directly to the Review recommendations and accessibility. For example, currently under examination is whether converting existing codes of practice to regulations would improve accessibility, and the question: "Should accessibility-related standards already established for some carriers through the adjudication of cases — such as the one-person-one-fare rule for domestic Air Canada and WestJet flights — apply more widely in the interest of a level playing field and to protect the rights of persons with disabilities?" (CTA, 2016b).

Another relevant federal government undertaking led by Employment and Social Development Canada (ESDC) is the development of accessibility legislation that will "promote equality of opportunity and increase the inclusion and participation of Canadians who have disabilities or functional limitations" (Prime Minister of Canada, 2016). This began with a consultation process where ESDC engaged relevant stakeholders to inform the development of this legislation. Input was received through mail submissions, responses to an online questionnaire, and at in-person meetings. Participants in the consultation process identified the accessibility of transportation (under federal authority) as one of six priority areas for the federal government (ESDC, 2017). This new legislation may provide an opportunity for Canada to develop a formal definition of *disability* that can be used in a range of federal legislation, including the *Canada Transportation Act*.

### Federal Government and Tourism

The federal government offers a range of programs and initiatives that support the tourism industry and which are relevant to this report. The Federal Tourism Strategy is "a whole-of-government approach" that looks to develop and strengthen partnerships with industry and other orders of government in order to support tourism across the country (Industry Canada, 2011). One of the four priorities of the strategy is "[f]acilitating ease of access and movement for travellers while ensuring the safety and integrity of Canada's borders" (Industry Canada, 2011). TC and the CTA therefore have important roles to play in supporting this strategy by ensuring an accessible federal transportation system. Canada's tourism strategy could consider the growing demographic of older adults in Canada and abroad who are travelling to and within this country. Adapting the

transportation system to support the needs of this group of potential travellers would make Canada a more accessible destination for more people, thereby making it a more appealing tourism destination overall.

## **2.2 THE ROLES OF PROVINCIAL, TERRITORIAL, AND MUNICIPAL GOVERNMENTS IN TRANSPORTATION**

While the Panel focused mainly on the federal transportation network, it acknowledges that ensuring access to this network may involve the use of modes of transport under provincial, territorial, or municipal jurisdiction. Furthermore, this report's emphasis on door-through-door mobility meant that the Panel could not look at the federal transportation system in isolation. In practice, it is impossible to separate the different components of the Canadian transportation network.

Jurisdictional control over transportation is not straightforward. All three orders of government (federal, provincial/territorial, and municipal) participate in the regulation and governance of transportation infrastructure, such that a traveller will likely use infrastructure under the responsibility of each within a single journey. The federal government owns (and leases) Canada's large airport terminals, the provinces and territories have jurisdiction over some highways, and municipalities are responsible for the remaining road network. Other provincial or territorial responsibilities include driver licensing and some intra-provincial transit systems (e.g., GO Transit in Ontario).

Across Canada, municipalities have a major role in transportation, most notably in the provision of municipal transit systems. Generally, transit systems are limited to Canada's largest municipalities, which operate multimodal transit systems (e.g., trains, subways, buses). Some smaller communities operate transit services, such as providing demand-responsive services for older adults and those with disabilities during certain hours (Sylvestre *et al.*, 2006). Additional municipal roles in transportation include maintaining sidewalks and roads other than highways, and enforcing parking regulations — although the exact nature of responsibility varies slightly depending on the province or territory and municipal structure (FCM, 2006). The federal government does have some influence over municipal transit as municipalities often depend on investments from the other orders of government to support the building of new transportation infrastructure (or renovation of existing infrastructure). For example, the federal government contributed \$164 million to the revitalization of Union Station in Toronto (the total cost of which was \$640 million) (City of Toronto, 2017). The federal government has committed to further investment in updating transportation infrastructure, including components under municipal (or provincial) jurisdiction. As part of Budget 2017, the Government of Canada

announced it would be investing \$20.1 billion over the next 11 years to “build the new urban transit networks and service extensions that will transform the way that Canadians live, move and work” (GC, 2017c). It has also recently announced there will be billions of dollars invested in trade and transport infrastructure (Press, 2017).

### **2.3 THE ROLE OF INDUSTRY PARTNERS IN TRANSPORTATION OPERATIONS AND ACCESSIBILITY**

Industry and Crown corporations, including transportation service providers, operators of airports, train and bus stations, and ferries, and providers of infrastructure, can participate in improving the accessibility of the federal transportation system because private companies are the owners and operators of many of this system’s key components. Companies in the transportation industry often develop and/or implement changes that are intended to meet, and sometimes exceed, rulings, regulations, and codes of practice. These changes may be technical, updates to service models, or improved human resource training, among others.

Improving accessibility can yield economic benefits by increasing the pool of potential customers for a given service and generating good will among the general public. Despite the lack of Canadian laws or codes requiring cruise lines to follow disability guidelines, for instance, they recognize the need to adapt to an aging population and have made their cabins and amenities more accessible (Tierney, 2009). In addition to economic benefits, transportation service providers may seek to continually improve their operations in order to ensure the best customer service and to act as good members of the community. The economic benefits of increasing the accessibility of the transportation system for the older traveller are discussed further in Chapter 3.

### **2.4 SUMMARY**

The federal government has a central role to play in governing and improving the accessibility of the transportation system in Canada. Governance of air, rail, intercity bus, and some marine travel falls under its jurisdiction, although the operations and funding of these modes occur in partnership with other orders of government, not-for-profit entities, and the transportation industry. All jurisdictions, partners, and operations would need to work in concert to make the Canadian transportation system more accessible to older adults (and to make movement between transportation modes more seamless), since a traveller may depend on various modes and vehicle types throughout a single journey.



One of the key governance roles under federal jurisdiction is ensuring accessibility of air, rail, intercity bus, and some marine travel, which is primarily carried out by the CTA. Currently, Canada mainly depends on codes of practice (as opposed to regulations) to ensure these modes are accessible to people with disabilities, but the CTA's powers to bring about change are limited. Recently, the federal government began to examine the current approach to ensuring accessibility and other elements of transportation governance through the *Canada Transportation Act Review* and other activities. Because the government is currently examining the specific role of TC and the powers of the CTA, it is an ideal time to consider what changes and activities may support the removal of travel obstacles for older adults. Improvements to the accessibility of the federal transportation system — in collaboration with the transportation industry and other orders of government, where possible — would minimize obstacles for a range of travellers, including older adults, and therefore support both social equity and Canada's tourism sector.

# 3

## **The Transportation Needs of Older Adults in Canada**

- **Demographics of Older Adults in Canada**
- **Older Adults Are a Heterogeneous Group**
- **Older Adults Have Various Transportation Preferences, Needs, and Behaviours**
- **Increasing Numbers of Older Travellers Is an Economic Opportunity**
- **Knowledge Gaps and Conclusions**

### 3 The Transportation Needs of Older Adults in Canada

#### Key Findings

- Aging is a normal process that includes a variety of physical, cognitive, sensory, and social changes.
- Older adults in Canada form a diverse group with a range of abilities and characteristics. These characteristics, including differences in geographic location and income, influence their transportation needs and preferences.
- The Canadian transportation system must adapt to older adults if it is to meet the diverse needs of this growing population.
- Older adults are varied in their use of, and comfort with, digital technologies.
- Ageism can impact transportation choices and opportunities for older adults.
- Travel for pleasure is important for older adults who are, in many ways, ideal tourists. The creation of an inclusive transportation system could provide broad economic benefits by making travel more attractive to the growing cohort of older travellers.
- Significant knowledge gaps limit understanding of the transportation needs of older adults in Canada. These include a lack of research into discretionary travel by older adults, the transportation needs of older adults in rural or remote communities, and the transportation needs of, and challenges faced by, older Indigenous adults.

Adults aged 65 or older are an important and growing demographic in Canada, with almost six million living in Canada in 2016, up from just over five million in 2012 (StatCan, 2016d). This number is expected to rise to over 10 million by 2036 (Hudon & Milan, 2016), whereby one in four people will be 65 or older, compared to one in six today (StatCan, 2015c, 2015e, 2016c). Currently, the rate of growth for this population is higher than any other population subgroup, and as of 2015 — for the first time in Canada’s history — there were more people aged 65 years or older than 14 years or younger (StatCan, 2015c). Additionally, the number of people over 80 was greater than 1.5 million in 2016 (up from under 1.4 million in 2012) (StatCan, 2016d), and people in their late nineties were the fastest-growing age group in 2014–2015 (Hudon & Milan, 2016).

As noted in Chapter 1, the Panel adopted the use of personas to illustrate the older traveller and the obstacles they face using the Canadian transportation system. Four personas have been developed and are presented throughout this chapter in blue boxes: Charlotte and François (Quebec, 84/86 years old), Yumi (British Columbia, 73 years old), Patrick (Alberta, 65 years old), and Marie (Nova Scotia, 89 years old). Each persona exemplifies common obstacles or concerns among older adults, such as mobility, income, or lack of familiarity with newer technology.

### 3.1 DEMOGRAPHICS OF OLDER ADULTS IN CANADA

The population age structure among provinces and territories is highly variable. The percentage of the population over 65 is higher in the Atlantic provinces, British Columbia, and Quebec compared to the Canadian average, while it is lower in Alberta and the territories (StatCan, 2017b). At the extremes, as of 2016, 20% of Nova Scotians were over 65 while the same was true for only 3.8% of Nunavummiut (StatCan, 2017b). The proportion of Indigenous adults aged 65 or older was about 6% in 2011, compared to over 14% for non-Indigenous adults in the same year (StatCan, 2013). As of 2011, a smaller proportion of Indigenous adults aged 65 or older lived in an off-reserve population centre (52%),<sup>5</sup> compared to 80% of non-Indigenous adults in the same age group (O'Donnell *et al.*, 2017).

In general, people in Canada can expect to live well past 65 years. Life expectancy is 81.7 years (StatCan, 2015e); women who survive to 65 can expect to live another 21.7 years on average, while men can expect to live an additional 18.8 years (Hudon & Milan, 2016). Differences in mortality and life expectancy between the sexes mean that the difference in numbers between men and women increase with age (Hudon & Milan, 2016); the proportion of women to men is approximately 1:1 at 65 years of age, but widens to 2:1 for the 85–99 years cohort, and almost 5:1 for the greater than 100 years group (StatCan, 2017c).

### 3.2 OLDER ADULTS ARE A HETEROGENEOUS GROUP

Aging is a normal physiological process that includes a variety of physical, psychological, cognitive, and social changes that affect individuals in different ways. Older adults as a group cannot therefore be defined by any one set of characteristics, as they have a diverse range of abilities, interests, and living situations, with needs that vary accordingly. Some older travellers are affected by physical conditions that make movement challenging due to pain and reduced mobility. Others retain high levels of mobility and travel frequently, and still other individuals reside somewhere between these two groups. People in Canada over the age of 65 are today healthier, more active, and wealthier than those of the past (Turcotte & Schellenberg, 2006; StatCan, 2015e). The term *older adult* encompasses a wide age range, and the abilities and preferences of people often change significantly as they age from 65 to 75 to 85 and beyond. The needs of different cohorts of older adults are also not uniform. For instance, the needs and preferences of adults who are 75 today may be very different

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5 A population centre is defined by O'Donnell *et al.* (2017) as “an area with a population of at least 1,000 persons and no fewer than 400 persons per square kilometre.”

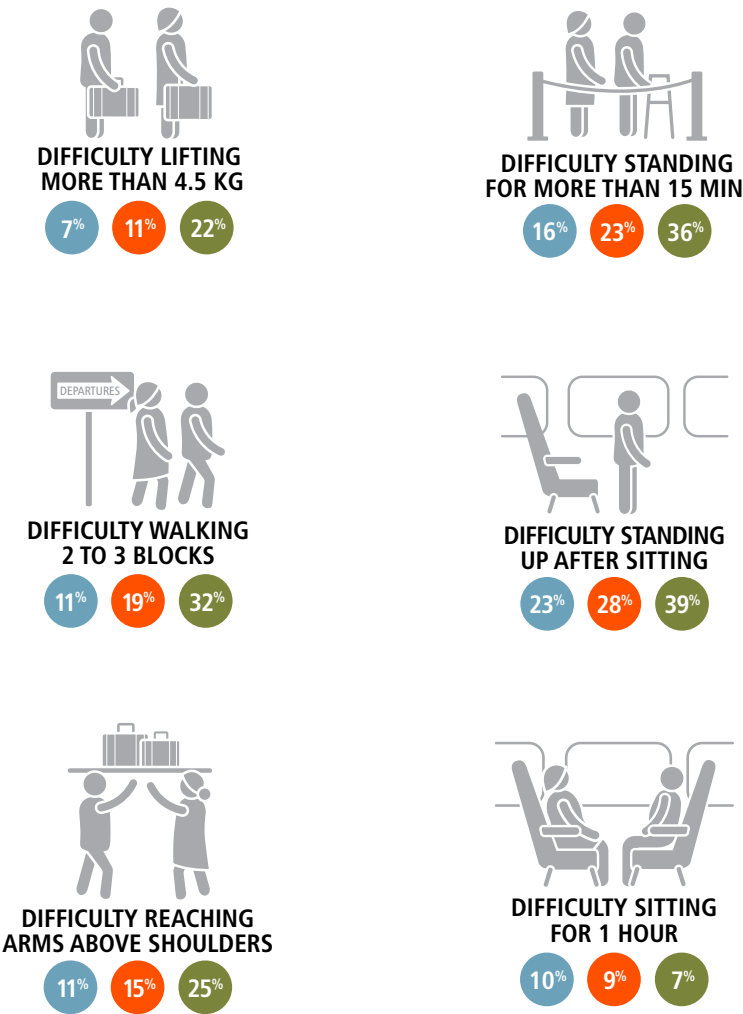
from those who will be 75 over the next 25 years, as they may have a different relationship with technology than the previous generation, as well as evolving cultural values and preferences (Turcotte & Schellenberg, 2006).

The vast majority of older adults currently aged 65 or older self-identify as being in good health. Almost 80% of adults over 65 living in private households in Canada rate their health positively (excellent, very good, or good), while over 94% of the same group rate their mental health positively (Hudon & Milan, 2016). There are, however, some physical changes associated with aging that may include reduced dexterity, changes in balance, and reduced range of motion. These changes can make tasks such as gripping and climbing stairs more challenging. Results provided by the Canadian Longitudinal Study on Aging (CLSA)<sup>6</sup> (Raina *et al.*, 2009; Kirkland *et al.*, 2015) demonstrate that there are a range of activities that can be challenging for older adults, and that the proportion of adults with limitations increases with age (Figure 3.1). These data reveal that the most common tasks that challenge older adults are standing up after sitting in a chair and standing for a long period (15 minutes or more). Given these results, it is not surprising that about 20% of women aged 65 or older and 14% of men aged 65 or older living in private households in Canada receive help with day-to-day activities, and that these proportions increase with age (Hudon & Milan, 2016). Of adults aged 65 or older, about 44% of women and 54% of men are categorized as active or moderately active, and this proportion decreases with age (Hudon & Milan, 2016).

Chronic conditions are common among older adults, with most stating they have at least one condition (StatCan, 2009) (Figure 3.2). High blood pressure is the most common chronic condition, followed by arthritis (Hudon & Milan, 2016). In some cases, but not all, physical changes are more extreme and constitute a disability (defined as “[a] long-term physical or mental condition [that] limits a person’s daily activities” by Statistics Canada) (Hudon & Milan, 2016). These more extreme changes include being able to move only very slowly, significant pain associated with walking, or very limited vision or hearing. Pain is the most common disability, followed by issues with mobility and flexibility (Hudon & Milan, 2016). Women aged 65 or older report that they are in pain more frequently than men of the same age, and are more likely to have a chronic condition or disability (Hudon & Milan, 2016) (Figure 3.2). Data also show that walking impairment is higher for women (Asher *et al.*, 2012).

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6 These findings are from the data/samples collected by the CLSA. Funding for the CLSA was provided by the Government of Canada through the Canadian Institutes of Health Research under grant reference: LSA 9447 and the Canada Foundation for Innovation.

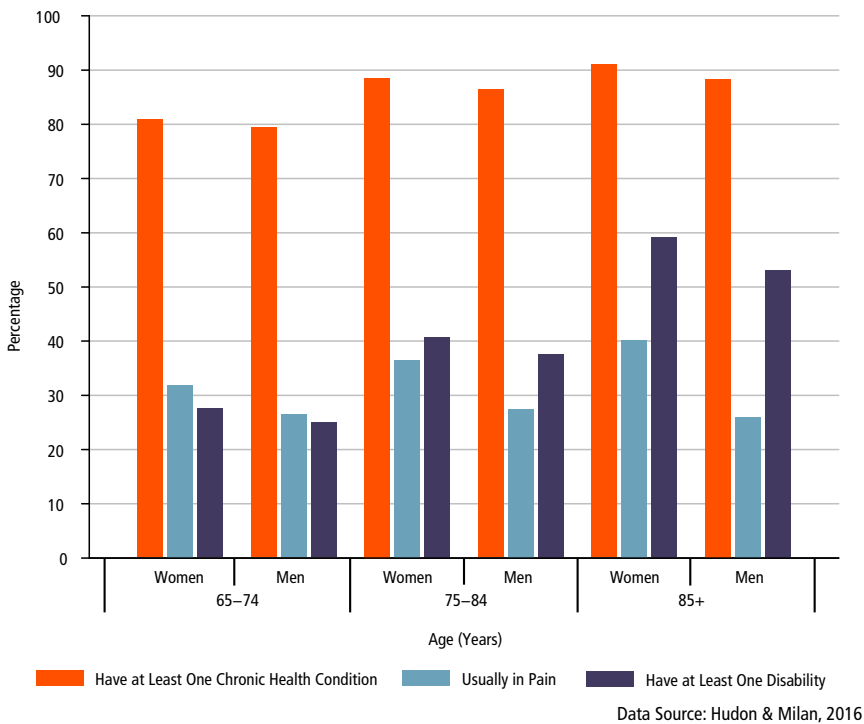


● Age: 65-74 YRS      ● Age: 75-84 YRS      ● Age: 85+ YRS

Data provided by the Canadian Longitudinal Study on Aging

**Figure 3.1**  
**Older Adults in Canada Who Have Difficulty Performing Certain Tasks**

The percentage of older adults who have difficulty with or cannot perform specific tasks, stratified by age. Percentages are based on the number of respondents. Data was collected from 2011 to 2015.



**Figure 3.2**  
**Older Adults in Canada with Certain Health Conditions, Divided by Age and Sex**

The percentage of the population of older adults in Canada who have at least one chronic health condition (orange bars), are usually in pain (blue bars), or who have at least one disability (purple bars), stratified by age and sex.

When mobility is moderately or severely limited, older adults may need to use mobility assistive devices such as canes, walkers, or wheelchairs, as illustrated by the personas of Charlotte and François. For some, these assistive devices provide enough support to allow them to maintain some independence in their mobility. Others need the support of another individual in addition to an assistive device. For instance, approximately 60% of wheelchair users between 65–84 years report needing help with getting around in a wheelchair and this increases to approximately 75% for people who are 85+ (Shields, 2004). Aging also impacts both hearing and vision according to comparable U.S. studies; a person who is 60 generally needs three times as much light to see compared to a 20-year-old (Green, 2013) and almost half of Americans over 75 have difficulty hearing (NIDCD, 2016). As the population ages, there are also an increasing number (although a stable percentage) of cases of cognitive

disabilities, including dementia (StatCan, 2016a). Diagnoses of cognitive impairment, including dementia, in Canada for those aged 65 or older rose to almost 750,000 in 2011 (Alzheimer Society of Canada, 2013). By 2031, the number of diagnoses is expected to increase to 937,000 (Alzheimer Society of Canada, 2017).

### **CHARLOTTE AND FRANÇOIS (84 and 86 years old)** *Quebec*

Married couple Charlotte and François have lived in Matagami, QC, all their lives. They are retired and live mostly on their old age pensions plus a small stipend from their former business. Both Charlotte and François have reduced hearing and vision, and limited mobility; outside the home, François uses a cane and Charlotte uses a wheeled walker. Sitting for long periods is difficult for them, as Charlotte has osteoarthritis and François has chronic back pain.



One of Charlotte and François' daughters, Caroline, lives in Val-d'Or. Caroline's eldest son is getting married this winter, and is hoping his grandparents will attend. Charlotte and François would very much like to be there, but neither is comfortable driving outside Matagami and, with work and wedding preparations, it will be difficult for Caroline to make the long trip to pick them up. The only public travel option is the intercity bus from Matagami to Val-d'Or, a 3.5-hour journey.

Charlotte and François have a number of concerns about the trip:

- How will they manage their luggage? Will they be able to use their walking aids to board the bus and move up the aisle?
- How will they know when they reach Val-d'Or and will there be any pit stops to eat and stretch?
- How will they get in touch with Caroline if the bus is delayed, given that they have no cell phones?



While the vast majority of older adults do not have cognitive disabilities, changes in cognitive processes do affect the broader population. Cognitive difficulties that increase with age can be associated with changes in physical performance (Best *et al.*, 2016) that may result in a decline in mobility (Sorond *et al.*, 2015). For example, gait performance has been linked to specific cognitive changes in older adults (Cohen *et al.*, 2016). Cognitive changes may also include short-term memory loss, changes in reaction time, and may change the way an individual generally interacts with the environment. Stress, which is often associated with travel, may also interact and accentuate cognitive difficulties. Older adults are more susceptible to distracting information, or information on the periphery of one's focus of attention as a result of reduced ability to prevent unwanted cognitive processing (Amer *et al.*, 2016a, 2016b). This change does have benefits, however, as older adults remember more things outside their primary focus compared to younger adults (Rowe *et al.*, 2006). Additionally, a number of day-to-day activities have been found to benefit from less stringent cognitive control (Amer *et al.*, 2016b). These include creative problem-solving and more bottom-up, automatized, information-driven (rather than top-down, control-driven) processes, such as implicit/associative learning (i.e., binding information together better) (Amer *et al.*, 2016b). These benefits are in addition to the greater knowledge that older adults possess, which comes from their range of experiences. It should be noted that travel obstacles related to cognitive processes may result from person–environment interactions, such that the demands of a specific travel environment (which can include both physical and psychosocial components) exceed those of the older traveller's abilities, resulting in a person–environment misfit (Roden, 2013). For example, terminals or stations may resound with multiple echoes, and an older adult may therefore have difficulty hearing announcements, and interacting with staff or fellow travellers.

Reaching age 65 no longer means leaving the workforce. As of 2016, almost a quarter of adults in Canada aged 65–69 were still working (voluntarily or out of necessity), although this percentage drops to under 7% for those aged 70 or older (StatCan, 2016d, 2016e).

The vast majority of people aged 65 or older (over 90%) live in a range of configurations in private households — being part of a couple remains the most common arrangement (63%) (Hudon & Milan, 2016). This is the case for men more than women, however; in 2011, 76% of men aged 65 or older living in private households were part of a couple, while the number drops to 49% of women in the same age group (StatCan, 2014). Approximately 9 in 10 people aged 65 or older in Canada are grandparents (Hudon & Milan, 2016), and about 8% of all grandparents (aged 45 or older) live with one or

more grandchildren, with the number increasing to 11% among Indigenous grandparents (StatCan, 2015b). This arrangement is quite common among Inuit Peoples, where 22% of adults aged 65 or older live with at least one grandchild (O'Donnell *et al.*, 2017). Far fewer older adults live in collective dwellings (e.g., nursing homes) compared to private households, but the proportion of those who do increases with age. For instance, the proportion of women aged 65–69 living in collective dwellings is only 1.5%, while it rises to 35.2% for women aged 85+ (Hudon & Milan, 2016). These data demonstrate the importance of familial units to older adults; many may travel with companions and/or family. In some cases, these travel companions may be essential caregivers without whom travel would not be possible.

The median income of those aged 65 or older in Canada has increased steadily generation after generation, and was approximately \$25,700 as of 2015 (the mean is much higher, at over \$35,300) in 2013 constant dollars (StatCan, 2015d, 2017e; Hudon & Milan, 2016; Bank of Canada, n.d.) As shown in Figure 3.3, the median income of men over 65 continues to be approximately 1.5 times higher than it is for women of the same age group.

Generally, Indigenous adults aged 65 or older are more likely to live on low incomes compared to non-Indigenous adults (O'Donnell *et al.*, 2017). The prevalence of low income among people aged 65 or older reached a low in the mid-nineties, and has increased since then, as the median income of older adults has not grown at the same rate as that of other age groups (Hudon & Milan, 2016). Older adults are more likely to live on low incomes if they do not live in economic families. Economic families are defined by StatCan (2017d) as “a group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common-law, adoption or a foster relationship.” While just under 8% of adults aged 65 or older living in economic families are low income, the number rises to 32% for those living alone or with non-relatives (StatCan, 2017d). These data demonstrate that, while older adults are generally wealthier than past generations, many still live on small incomes and face the challenges associated with such, as is the case for the persona of Yumi. These challenges will often extend to transportation, as the costs associated with travel — especially over longer distances using modes that are within the federal transportation system (air, rail, intercity bus) — are often significant.

### 3.2.1 Older Adults and Technology

Information and communication technologies (ICT) are now commonplace in day-to-day life, and have become an integral part of travel and travel planning (Chapter 4). Many older adults are adopting these new technologies, although they are doing so much less quickly than the rest of the population. For

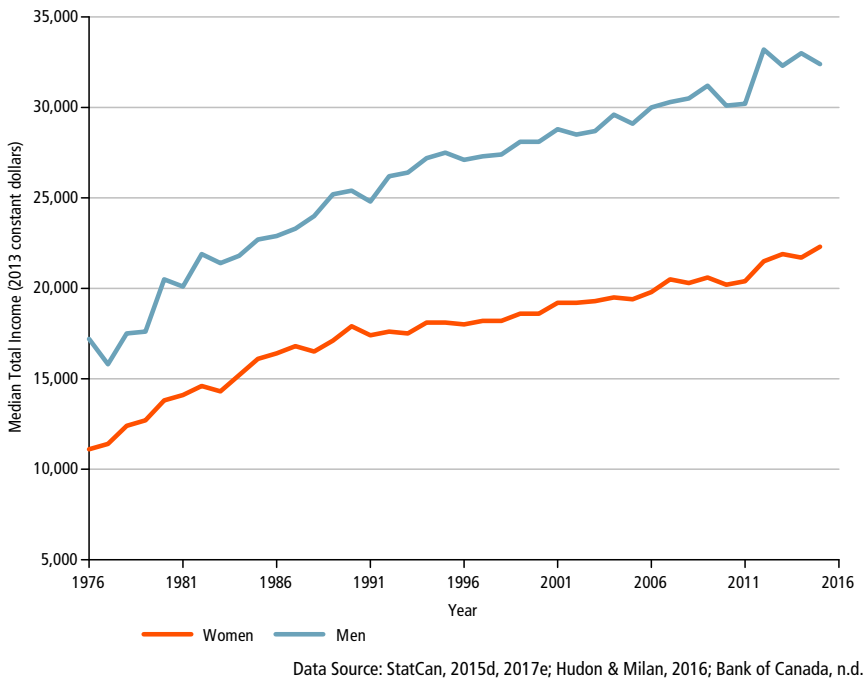


Figure 3.3

**Median Total Income of Adults Aged 65 or Older in Canada, Divided by Sex**

The median income (in 2013 constant dollars) of men (blue line) and women (orange line) aged 65 or older in Canada from 1976 to 2015. Data for 2014 and 2015 were converted to 2013 constant dollars using the Bank of Canada Inflation Calculator in September 2017.

instance, a Canadian survey released in early 2014 found that only 13% of adults aged 68 or older owned a smartphone, compared to 63% of other respondents (The Canadian Press, 2014). A recent U.S. survey of adults aged 65 or older found technology adoption increased between 2013 and 2017: 42% now own smartphones, compared to 18% in 2013; 67% use the internet, compared to 12% in 2013; and 51% have home broadband (Anderson & Perrin, 2017). However, adoption rates varied greatly by age, household income, and educational attainment, and the proportion of older adults who own a smartphone is still much lower than those aged 18–64 (Anderson & Perrin, 2017). These survey results suggest that technology literacy is highly changeable for older adults through time and data may quickly become out-dated — historic data may not accurately represent present or future trends.

### **YUMI (73 years old)** ***British Columbia***

Yumi is a divorced Japanese-Canadian who immigrated to British Columbia in 1972 with her former husband. After Yumi's divorce, money grew tight; because she was a homemaker while raising her daughter, Misato, the only work she could find after the divorce was a minimum-wage cashier job. Yumi now lives alone in a small apartment in Burnaby.



Misato lives in Seattle with her husband and son.

Now that their son is older, Misato and her family have many weekend commitments and rarely get a chance to visit Yumi. Yumi misses them and, having two weeks' worth of unused vacation, she considers travelling down to Seattle by train for the first time.

Yumi has a number of concerns about the trip:

- How will she manage planning the trip and travelling alone? She has never been to the train station and would have to travel by bus to get there.
- Can she afford the train ticket? Will she be able to bring food on the train to avoid having to buy an expensive meal?
- How will she contact Misato when she arrives? Will the prepaid cell phone Misato gave her work outside Canada?

Older adults who do adopt new technologies may use them differently than younger generations. This is not surprising, as today's older adults need to consciously develop "new practices and routines around their ICT use" since these technologies were not taught in school and, in some cases, not required at work (Quan-Hasse *et al.*, 2016). Based on interviews with digitally active older adults in Canada, researchers found that some rely on "hybrid practices" when using technology — going back and forth between traditional media (e.g., a newspaper) and various technological platforms (Quan-Hasse *et al.*, 2016). Interviews with older adults (60+) in Finland have further demonstrated that older travellers are a heterogeneous group with different preferences and levels of comfort when it comes to using technology as part of the travel process; some are "very avid user[s] of technology and [very] independent traveller[s]"

(Pesonen *et al.*, 2015). The Panel notes, however, that even older adults who consider themselves IT literate may want the reassurance of information from supporting staff.

While smartphone ownership remains relatively low, the majority of older adults engage in online activities. In Canada, 54% of women and 59% of men aged 65 or older reported using the internet in the past 12 months in 2013 (Hudon & Milan, 2016) and it is likely these percentages are higher today. Furthermore, 37% of women and 31% of men aged 65 or older who used the internet in 2013 were on social media, with the most popular platform being Facebook (Hudon & Milan, 2016). Although dated, these data do suggest that there is a sizable population of older adults, however, who do not access online sources such as booking services (see Chapter 4). This is true for people with disabilities as well. A U.S. study of adults with disabilities found that 46% used the internet to support their travel needs, with the most common use being “to find and/or book accessible hotels” (Mandala Research LLC, 2015). A larger proportion (57%) of the same group stated they used a mobile device to support their travel needs, with the most common tool being a hotel app. While these numbers are significant, they also demonstrate that there is a large group of American adults with disabilities who do not use online tools when travelling. Solutions to travel obstacles cannot therefore be based solely on personal communication devices and technology.

Often, the so-called “digital divide” between older adults and the rest of the population is attributed to characteristics of the former group, including lack of know-how, perceived lack of usefulness, fear of technology, reduced cognitive and physical faculties, and low computer literacy (Porter & Donthu, 2006; Hetzner *et al.*, 2014; Wu *et al.*, 2015). While these factors are relevant, ageism may also play a role (McDonough, 2016). Ageism includes negative behaviours such as demeaning attitudes toward older adults and a general assumption that they are too old to learn new things (Butler, 1969) (Box 3.1). Research has demonstrated that “elderly people” are perceived as having high levels of warmth but low levels of competence (Cuddy & Fiske, 2002; Cuddy *et al.*, 2005) and “ageism may lead to a reduction in self-efficacy among older adults,” which in turn leads to more anxiety about their ability to use the internet, for example (McDonough, 2016).

Wu *et al.* (2015) identify two types of technology that are relevant for older populations: technology whose target audience is the entire population, and “assistive technologies” that are designed specifically to assist older adults (or others) with special needs. Based on focus groups with older adults in France aged 63–88, researchers found that some older adults do not perceive that

they need, or that they could benefit from, technologies in the latter category even if they have a positive view of technology. These older adults identify as “healthy and independent” and are of the belief that assistive technologies are for the “very old” or for those who are “lonely or isolated” (Wu *et al.*, 2015).

### **Box 3.1**

#### **Ageism and Transportation**

Ageism is a reality in Canada and is potentially the most tolerated form of social prejudice. Stereotypes related to aging are often unchallenged and are resistant to change (Cuddy *et al.*, 2005). Ageism can affect transportation choices for older adults. This is illustrated in an interview with U.K. transportation professionals that revealed older adults are often not highly regarded (e.g., they are seen as “gumming up the works”) (Gilhooly *et al.*, 2002). Public transport professionals revealed that, from their point of view, “there was no distinction made between people with disability and older people” (Gilhooly *et al.*, 2002). However, there are examples in which developers and implementers directly target older adults in design features. For example, car manufacturers have made changes designed for older adults, including the introduction of steering wheels with more flexibility and hydraulic-powered driver seats (Gilhooly *et al.*, 2002).

### **3.3 OLDER ADULTS HAVE VARIOUS TRANSPORTATION PREFERENCES, NEEDS, AND BEHAVIOURS**

Older adults, as with other age groups, take part in many kinds of transportation activities, including day-to-day trips (e.g., groceries, medical appointments, banking, social visits) and longer trips (e.g., vacations, visits with out-of-town family). It is generally recognized that there is a link between the mobility of older adults and their quality of life (Joseph & Fuller, 1991; Metz, 2000; Musselwhite & Haddad, 2010). Data collected by the CLSA from 2013 to 2016 show that there is a relationship between age and the day-to-day trips made in a typical week (data provided by CLSA). While over 81% of older adults in Canada aged 65–84 use transportation for appointments on a weekly basis, this percentage drops to under 70% for people aged 85+. This drop is generally consistent across all types of day-to-day travel; 51% of adults aged 85+ typically use transportation to visit friends and family on a weekly basis versus over 60% of adults aged 65–84. This section discusses the transportation behaviours of older adults in Canada as well as their preferences in terms of discretionary travel.

### 3.3.1 Personal Vehicles Are the Most Common Mode of Transportation for Older Adults

In Canada, 68% of adults aged 65–74 use their own vehicle as the main form of transport, and 75% of adults aged 65 or older possess driver’s licences (Turcotte, 2012). The rate of licensing and driving declines with age, however. Among the oldest demographic of adults (85+), 31% drive their own vehicle, while 49% rely on being a passenger in someone else’s car as their primary means of transportation (Turcotte, 2012). These results are consistent with data collected by the CLSA from 2013 to 2016, which found that 93% of people aged 65–74 have a licence and drive, versus 85% of those 75–84, and 68% of those 85+ (data provided by the CLSA). Nearly all those who have a licence in these three age groups drive themselves as their primary form of transportation (Table 3.1). Of older adults who have a licence but do not use the car (as driver or passenger) as their primary form of transportation, walking or cycling (i.e., self-propelled transportation) is the most common way of getting around.

Among older adults without a driver’s licence, however, there are some interesting variations with respect to modes of transportation (Table 3.2). Among the 65–74 age group, the most common form of transportation for non-drivers is public transit or taxis, followed by travelling as a passenger in a car or truck. For the 75–85 and 85+ age groups, these modes are flipped — being a passenger in a car or truck is the most common mode. This may suggest these latter age groups are unable to use or are uncomfortable using public transit, especially if they previously drove themselves in a private vehicle when they had a licence and therefore do not have experience accessing the public transportation network. Importantly, the CLSA data show there is a population of older adults who cannot drive themselves and who need alternative forms of transportation (data provided by the CLSA).

Data collected by the CLSA from 2013 to 2016 suggest that older adults in Canada give up driving for a variety of reasons, with the most common being a physical condition or deteriorating vision (37%), followed by no longer needing to or enjoying driving (20%), and feeling it is no longer safe (15%)<sup>7</sup> (data provided by the CLSA). This suggests that losing the desire, ability, or licence to drive often coincides with declines in general physical or sensory abilities.

Interviews with adults aged 65 or older in New Zealand who gave up driving found that some were relieved to do so (Davey, 2007). Nevertheless, studies have found that, for many older adults, losing or voluntarily giving up their licence is a stressful and major event that greatly changes their lives. It may also

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7 Multiple responses were allowed.

Table 3.1

Most Common Forms of Transportation Among Older Adults in Canada Who Drive

Age	In the past year, which was your most common form of transportation?					Do not know/no answer or refused (%)
	Driving a motor vehicle (%)	Passenger in a motor vehicle (%)	Public or accessible transit/ taxi (%)	Cycling/walking (%)	Wheelchair or scooter (%)	
65–74 (n=8,833)	87.24	6.37	1.87	4.01	0.11	0.40
75–84 (n=6,013)	88.54	6.29	1.71	2.94	0.13	0.38
85+ (n=188)	91.49	5.32	1.06	1.60	0.00	0.53

Data provided by the Canadian Longitudinal Study on Aging

This table shows the most common form of transit in the past year for participants who have a driver's licence (with or without restrictions) and who actually drive, stratified by age. The number of respondents by age category is provided. The table reports frequencies and raw percentages based on the number of respondents. Data collected by the CLSA from 2013 to 2016.

Table 3.2

Most Common Forms of Transportation Among Older Adults in Canada Who Do Not Drive

Age	In the past year, which was your most common form of transportation?					Do not know/no answer or refused (%)
	Passenger in a motor vehicle (%)	Public or accessible transit/ taxi (%)	Cycling/walking (%)	Wheelchair or scooter (%)		
65–74 (n=706)	38.39	42.92	14.59	1.98		2.12
75–84 (n=1,073)	50.70	35.88	9.41	2.33		1.68
85+ (n=87)	58.62	32.18	4.60	0.00		4.60

Data provided by the Canadian Longitudinal Study on Aging

This table shows the most common form of transit in the past year for participants who do not have a driver's licence (currently or never), who responded with a "Don't know/No answer" or refused to respond to the driving status question, or have a driver's licence but never drive, stratified by age. The number of respondents by age category is provided. The table reports percentages based on the number of respondents. Data collected by the CLSA from 2013 to 2016.



lead to feelings of isolation and a sense of being a burden on those around them (Adler & Rottunda, 2006; Davey, 2007). A meta-analysis that included studies of driver cessation in older adults (with subjects ranging from 55 and older to 70 and older) from the United States, Australia, and Kuwait found that giving up driving almost doubles the risk of self-reported depressive symptoms (Chihuri *et al.*, 2016). The increase of depressive symptoms is found even when accounting for health-related and sociodemographic factors (Marottlooi *et al.*, 1997; Windsor *et al.*, 2007). Furthermore, U.S. researchers have demonstrated that there is a correlation between driving cessation in older adults (aged 65+) and general health declines (Edwards *et al.*, 2009). Research into the effectiveness of interventions to facilitate driving cessation in older adults (e.g., targeted support groups) indicates such efforts may reduce depressive symptoms and help people cope with driving cessation, although more research is needed (Rapoport *et al.*, 2017). For some, the mourning that accompanies losing a licence stems partially from a loss of spontaneity (Adler & Rottunda, 2006) and, as such, Metz (2000) proposes that true mobility also “include[s] the potential to make trips that are not actually made” (i.e., the ability to be mobile without needing to plan, such as getting to family quickly in an emergency). Some older adults also find it difficult to justify paying for different modes of transportation (e.g., taxi, bus) for discretionary travel once they cease driving (Musselwhite & Haddad, 2008), despite saving the costs associated with driving a car. It is not surprising, perhaps, that the most common unpaid help received by people aged 65 or older in Canada is transportation (Hudon & Milan, 2016).

In Canada, driver licensing falls under the jurisdiction of provincial or territorial governments. This includes decisions related to licensing standards and revocation of licences. There are therefore differences across the country with regard to renewal requirements, the frequency and type of testing, and triggering mechanisms for licence renewal (e.g., having to take a test or requiring a physician’s report after a certain age) or revocation (e.g., Gov. Of ON, 2017; Gov. of BC, n.d.). A review of multiple research studies found that simply using age-triggered testing is not an effective means of reducing the crash rate of older drivers (Dobbs, 2008).

One similarity in the licensing of older drivers across Canada is that all systems take an all-or-nothing approach (i.e., a full licence or nothing). A type of customized licensing is used across all provinces for new drivers, however, that includes restrictions such as zero blood alcohol content and limits on number of passengers (Mayhew *et al.*, 2016). In addition, many provinces have customized licences for people with certain medical conditions (Candrive, n.d.). A similar system for older drivers could include personalized restrictions based on the limitations of the individual, such as only driving during the day. Such a system may allow a greater number of older adults to safely and comfortably drive longer (Candrive, n.d.).

### 3.3.2 Importance of Discretionary Travel

Many older adults in Canada today have the financial ability and time to travel for pleasure (Turcotte & Schellenberg, 2006; RBC, 2015; StatCan, 2015d). In a Canadian online poll of adults over the age of 50 carried out by Ipsos Reid for RBC, taking time to travel was identified as both an important part of life for over 60% of retirees and one of the primary activities 70% of older workers expect to do in their retirement (RBC, 2015). This is the case for the persona of Patrick. Multigenerational travel in particular, often with family, is an important form of travel for older adults.

#### **PATRICK (65 years old)** *Alberta*

Patrick has recently retired from a successful 35-year career as an oil and gas company executive, and he and his wife Lauren are glad to have the freedom to tackle their travel bucket list. They are fairly well off and enjoy travelling. He and Lauren are also avid golfers and prefer to travel with their own golfing equipment. Patrick recognizes that his travelling needs have changed in recent years. His back pain, which he treats with medication, is a greater concern and he is unable to lift as much as he used to.



Patrick and Lauren have a daughter, Rebecca, who lives in Vancouver with her husband and toddler-aged son. Patrick and Lauren are planning to visit Rebecca and her family and think now is the time to cross an item off their bucket list: exploring the Rocky Mountains by train. In order to make this trip, they will first have to fly from Calgary to Edmonton, at which point they will board the train where they have booked a private cabin to Vancouver.

Patrick and Lauren have a number of concerns about the trip:

- Will they have enough time to transfer from the airport to the train station? Is a shuttle available or will they have to rely on taxis?
- How will they manage to get their baggage, including golf equipment, from the airport to the train station?
- Will they be able to access up-to-date transit information about both the plane and train on their smartphones?

There is little publicly available data related to travel that is delineated by age. Statistics Canada data demonstrate that, in 2016, people aged 65 or older took approximately 50,000 domestic trips in Canada (about 30% of which were overnight), with expenditures of about \$6.6 million (StatCan, 2017a). However, there appears to be no detailed information about international travel. What is known is that people living in Canada make a significant number of trips to other countries, with over 20 million visits to the United States in 2014, and over 8 million visits to other international destinations (StatCan, 2016b, 2016c), but data are not delineated by age.

Information is available on the use of air, rail, and intercity bus, and generally this data can be useful for assessing the relative popularity of each mode of transport. An estimated 131 million passengers boarded planes and deplaned in Canada in 2015, with approximately 60% on domestic services, 20% on services between Canada and the United States, and 20% on other international services (TC, 2016a). Approximately 90% of this passenger traffic involved Canada's 26 NAS airports. Canada's busiest three airports are Toronto Pearson International, Vancouver International, and Montréal–Pierre Elliott Trudeau International (TC, 2016a). Air Canada and WestJet were the dominant carriers in the domestic air market in 2015. Other notable Canadian carriers included Porter Airlines (a Toronto-based regional carrier), and Canada's two largest leisure carriers, Air Transat and Sunwing Airlines (TC, 2016a). Canada's passenger rail company, VIA Rail Canada, moved 3.82 million passengers by train in 2015, which was slightly more than the previous year, but still less than its peak of 4.6 million in 2008 (TC, 2016a). There is currently less known about intercity bus use. In 2006, the most recent year for which Statistics Canada released data on passenger numbers, 16.8 million passengers used intercity bus services in Canada (TC, 2012). Greyhound is Canada's largest intercity bus company (Greyhound, 2016a) and from 2003 to 2013, the number of intercity bus companies significantly decreased from 32 to 18 (TC, 2014, 2016f). Finally, in 2015, international cruise ships carried almost 1.34 million passengers at major Canadian ports, with approximately 60% of these in Vancouver, 17% in Halifax, and 9% in Québec City (TC, 2016a). Canada's largest ferry operator is BC Ferries, which carried 16.7 million passengers on various routes in 2015 (TC, 2016a).

Research on older adults has shown that there are a number of factors correlated with increased overnight travel. For example, leisure travel participation increases with income for older adults (50+) in the United States (Jang & Ham, 2009). Being married also increases travel participation (Jang & Ham, 2009). An interview questionnaire directed at older adults (55+) in Spain found that having a high income, and having self-perceived time, were linked to greater

likelihood of travel (Alén *et al.*, 2016). This research also showed that older adults who had travelled for leisure in the past (at any age) were more likely to travel in the future (compared to non-travellers) (Alén *et al.*, 2016). The study also found that older adults appeared to have different travel preferences compared to other demographics. For example, organized trips (e.g., through touring companies) versus independent or self-directed trips are more popular among older adults than younger adults for a variety of reasons, including having people to travel with, security, and convenience (Alén *et al.*, 2016). However, older adults are a heterogeneous group when it comes to travel preferences. For instance, U.S. baby boomers (born between 1946 and 1964) are, on average, more likely to engage in leisure travel compared to adults born in 1945 or earlier, but those in the latter group tend to spend more money if they do travel (Jang & Ham, 2009).

### **3.3.3 Transportation Needs in Rural or Remote Communities**

Many older adults in Canada live in rural or remote locations. About one-fifth (22%) of those aged 65 or older live in regions outside census metropolitan areas (CMA, areas with populations greater than 100,000) (Turcotte, 2012). Some live in rural communities, which can be defined as populated areas with fewer than 1,000 inhabitants, or remote communities, which have no roads into the community (GC, 2015a; StatCan, 2015a). In rural and remote communities, transportation infrastructure is associated with higher costs compared to urban and suburban regions. These costs arise due to the difficulty of accessing more remote regions (TC, 2006; GC, 2015a) and inability to reach the economies of scale needed for cost-effective transit system development because of low population densities (TC, 2006; PHAC, 2011). Reliance on personal vehicles for short and longer trips is therefore high in rural communities, as is dependence on intercity buses for travel outside an individual's community (Council of Deputy Ministers, 2010), though the ratio of operating costs relative to ridership density can lead to closures in rural areas (see Section 4.2.4). For some older adults living outside larger towns, travel over long distances for appointments (e.g., medical) is often required. Indigenous Peoples living in rural or remote communities, moreover, have unique transportation needs (Box 3.2).

**Box 3.2****Transportation Needs of Indigenous Peoples Living in Remote Communities**

A high proportion (58%) of remote communities have primarily Indigenous inhabitants (StatCan, n.d.). This figure is significantly higher in the North, with Indigenous communities representing 77%, 89%, and 91%, of active remote communities (i.e., remote communities using electricity and/or other energy sources) in the Northwest Territories, Nunavut, and Yukon respectively (StatCan, n.d.).

Deficiencies in available air travel have given rise to a unique set of transportation challenges in the remote Inuit Nunangat communities of the Canadian Arctic. While the Inuit have travel-based cultures, relying heavily on traditional modes of travel across sea ice (ICC, 2008, 2014), the Inuit Circumpolar Council (a non-profit organization that operates in support of Inuit rights and Arctic protection) acknowledges that contact with non-Inuit peoples over the 20<sup>th</sup> century has brought socio-historical changes to northern communities (ICC, 2008, 2014). In response, Inuit leaders and community members have voiced a need to adapt to certain non-traditional practices — including non-traditional modes of transportation — to promote economic stability while also retaining community members and preserving the Inuit way(s) of life (ICC, 2008, 2014). TC recognizes the transportation deficits in rural and remote Indigenous communities and the unique obstacles and needs of both Inuit and First Nations communities in the Arctic (TC, 2016g, 2016h). Further, some suggest that the criteria requirements of federal infrastructure programs do not reflect the conditions in the North or the needs of residents, thereby excluding them (TC, 2016h). Direct Indigenous consultation early and often, and the incorporation of traditional knowledge, have been identified as key to addressing the transportation challenges in Indigenous communities (ICC, 2008, 2014; TC, 2016h).

### **3.4 INCREASING NUMBERS OF OLDER TRAVELLERS IS AN ECONOMIC OPPORTUNITY**

An inclusive transportation system that leads to a greater number of travellers has a range of social benefits that extend far beyond the individual. These include the promotion of social equity and social inclusion for everyone in Canada including, but not limited to, older adults. An increase in the number of older travellers may also lead to high-quality intergenerational interactions, something that has been demonstrated to reduce ageist attitudes (Caspi, 1984; Schwartz & Simmons, 2001). More travel could also expose older adults to a greater number of people, thereby breaking ageist stereotypes, which may

lead to increased feelings of esteem (Cuddy *et al.*, 2005). Additionally, an inclusive transportation system could support older adults in retaining their independence and mobility for longer, and prevent the physical and mental health declines sometimes associated with loss of mobility.

The number of older travellers is growing and this growth is expected to continue. A study of outbound travel by people in New Zealand found that the fastest rate of growth of travel over the period of 1999 to 2009 was for people aged 60–69 (an increase of 131%) followed by travellers aged 70+ (up 81%) (NZMBIE, 2009). Looking forward, the Government of Canada estimates that total visitors to Canada will increase by 45% for adults aged 65 or older between 2010 to 2020, compared to an increase of only 21% for travellers overall (TC, 2012). This increase would mean that 23% of travellers entering Canada will be aged 65 or older by 2020, up from 19% in 2010 (TC, 2012).

Some experts estimate the older adult travel industry has the potential to grow even further. For example, a study carried out in the United States that surveyed and interviewed adults with disabilities found that, while a majority of respondents had travelled within the past two years (71%), there was a sizable population (29%) who had not travelled (Mandala Research LLC, 2015). A study of air travellers in the United Kingdom found that, compared to younger adults, fewer people aged 60 or older had taken at least one international flight in the previous year (Department for Transport, 2014). While the Panel could not identify similar surveys for Canada, or for older adults in particular, these results show there is an opportunity to grow this subset of the travel market. One way to increase travel is to ensure that the transportation system meets the needs of all passengers, including older adults. As explained by Frye (2015b):

[T]he choice which older and disabled tourists make of holiday destination will be influenced much more strongly than other age groups by concern for the total accessibility of the trip from the airport of departure to the hotel at the destination as well as ease of getting around the destination, city or resort.

More people travelling to a destination means that more money enters the local economy. It is estimated that American travellers with disabilities of all ages spent US\$34.6 billion on travel in the last two years (Mandala Research LLC, 2015). This came to an average of about US\$500 per traveller per trip (Mandala Research LLC, 2015). These travellers also supported a range of companies throughout their journeys, with almost all eating in restaurants

and about three quarters staying in hotels. Additionally, of those who travelled, 43% had taken a flight in the previous two years, while 12% had taken a train (Mandala Research LLC, 2015).

A more accessible and age-friendly transportation system may attract international travellers as well as encourage domestic travel. Developing a reliable transportation system that runs on a consistent and regular schedule would also encourage tourism. Travellers are consumers of transportation and many consumers are willing to shift their spending based on their experiences with or perception of a company (Forrester, 2016). An expert panel study identified “barrier-free public transportation facilities” as essential for a destination to be considered “seniors-friendly” (Lee & King, 2016). Overall, the same study found that accessibility was more important than all other categories (amenities, complementary services, and tourism resources) when determining “senior tourism attractiveness” (Lee & King, 2016). More than a quarter of U.S. travellers with disabilities have taken trips internationally within the last five years and spent, on average, US\$2,500 (much higher than the average traveller expenditure of approximately US\$500) (Mandala Research LLC, 2015). Another study from Europe estimates that spending per vacation averages €620 per traveller (as cited in Alén, 2012). It is estimated that the potential revenues from tourism for people with reduced mobility total between €83 billion to €166 billion in Europe alone (as cited in Alén, 2012).

In many ways, older adults are ideal customers for the travel and tourism industry. A survey-based study of adults in the United States found that overnight trip frequency increased with age up to age 79 and that older travellers spent more money on a given trip than younger travellers (Hung *et al.*, 2007). This trend of increased spending is consistent with other studies. For instance, U.S. travellers who are 65+ with disabilities spend, on average, more for airfare than other age groups (Mandala Research LLC, 2015). A Deloitte (2010) report estimates that American baby boomers (born in the 1950s or 1960s) own 60% of that country’s wealth and are responsible for 40% of all spending. Additionally, older travellers are less likely to be impacted by economic downturns (European Commission, 2013, as cited in Frye, 2015b). For instance, between 2006 and 2011 the European tourism market was negatively affected by an economic slump and there was a drop in travel among people in all age groups except adults aged 65 or older (European Commission, 2013, as cited in Frye, 2015b). Retired travellers have the opportunity to travel frequently, for long stretches, and outside peak times. These travellers may also travel as part of a familial unit (which may include children and grandchildren, for example), and therefore bring additional tourists with them. This is illustrated by the persona of Marie.

## MARIE (89 years old)

### Nova Scotia

Marie is a widowed former homemaker who moved in with her daughter, Jackie, and son-in-law, Fred, after their own children left for university. Jackie currently works part-time and helps take care of Marie, who has early-stage Alzheimer's and uses a manual wheelchair outside the home because of knee problems. Marie has not travelled since she started using a wheelchair and received her Alzheimer's diagnosis. She also tends to fatigue easily when away from home for long stretches, and she finds noisy, crowded places stressful.



Marie has a sister in Florida whom she hasn't seen in 15 years. This year marks Marie's 90<sup>th</sup> birthday and Jackie wants to do something special and fly with her husband and mother to Florida to visit Marie's sister.

Jackie and Marie have a number of concerns about the trip:

- Will they be able to get health insurance for Marie?
- Will Marie be comfortable on the airplane and in the busy airports? Are the staff trained to handle wheelchairs and prepared for medical emergencies?
- Will Jackie and Fred be able to get help unloading and checking their luggage? Are there support services available at the airport and what do they cost?
- How will they manage with Marie's wheelchair on the plane? Will there be help boarding and deplaning?

The economic benefits of developing an inclusive transportation system may be particularly significant for northern Canada. The lack of transportation infrastructure in the North has been identified as an important challenge that leads to "lost economic potential" (TC, 2016h). Better and more accessible transportation infrastructure would both meet the transportation needs of the local population, many of whom are Indigenous, and allow more people to visit the North, therefore benefiting residents economically. The desire for people to visit the North is illustrated by the recent introduction of large cruise ships to Nunavut. In August 2016, 1,000 passengers on the Northwest Passage trip of the *Crystal Serenity* cruise ship disembarked in Cambridge Bay, Nunavut (Brown, 2016). Although cruise ships were common in the area (with about five ships stopping in the community every year), the *Crystal Serenity* was 10 times



larger than any ship that had previously visited the community (Brown, 2016; Hopper, 2016). As of June 2017, the cost of the Northwest Passage trip ranged from approximately \$29,000 to \$160,000 (Crystal Cruises, 2017); the high cost of tickets suggests that passengers likely have high disposable incomes and are likely to spend money in the communities they visit.

### **3.5 KNOWLEDGE GAPS AND CONCLUSIONS**

The Panel identified several knowledge gaps that prevented an exhaustive analysis of transportation needs and preferences of older adults in Canada. First, research into essential and day-to-day travel habits of older adults focuses primarily on those in urban settings. As many older adults in Canada live in rural or remote communities, where public transit is limited or unavailable, this is a significant gap. Second, while the Panel was able to find travel information related to Canada in general, the data were not usually delineated by age. This made it challenging to discuss the specific travel behaviours of older adults. Finally, while the Panel believes that increasing the number of older travellers in Canada will yield economic benefits, there has not been a formal analysis that quantifies these potential benefits.

An examination of older adults in Canada reveals that they are a heterogeneous group, with a range of abilities. As such, older adults vary in their transportation needs and preferences, which in some cases are different from those of other age groups. Further, older adults living in rural and remote locations, and specifically Indigenous communities, have unique transportation needs. Importantly, older adults are a growing demographic among travellers and a strong economic force. Ensuring that the transportation system is inclusive and accessible to all supports social inclusion, but could also lead to large economic benefits by empowering more of the growing demographic of older adults to travel.

# 4

## **Door-Through-Door Journeys: Obstacles and Opportunities**

- **Planning the Journey**
- **Travelling from Home to Terminal/Station**
- **Getting from Terminal/Station to Transport Vehicle**
- **Boarding and On Board Transport Vehicles**
- **Travelling Between Transport Vehicles**
- **Post-Trip**
- **Knowledge Gaps and Conclusions**

## 4 Door-Through-Door Journeys: Obstacles and Opportunities

### Key Findings

- Obstacles are faced at every stage of the door-through-door journey, from planning a trip, through accessing and travelling aboard transport vehicles, to completing the journey by reaching the desired destination.
- While some obstacles are specific to one stage of the journey, other challenges, such as those associated with wayfinding, appear throughout the trip.
- Canada's weather, large size, low population density, and socioeconomic environments create obstacles for all travellers in the Canadian transportation system. For example, delayed or cancelled trips may occur during the winter months as a result of weather. These obstacles may be more pronounced for older travellers.
- A range of practices could minimize obstacles faced by older travellers and make the transportation system more inclusive, enhancing the travel experience for everyone. Effective practices may be simple and inexpensive to implement, such as age-friendly customer service initiatives and assistance programs that consider the specific needs of older travellers.
- Many stakeholders are responsible for the implementation of these practices, including different orders of government, transportation service providers, airport authorities, rail and ferry terminal operators, and travellers themselves. Collaboration among different stakeholders is especially important for practices that support multimodal travel.
- The social and economic benefits that may result from effective practices provide incentive for the transportation sector and all orders of government to work together towards implementation.

Older travellers may face a number of obstacles over the course of a journey. As discussed in Chapter 3, and as illustrated by the personas, older adults are heterogeneous so these challenges impact individuals in different ways. Obstacles can stem from a range of sources: differing abilities and preferences related to technology, physical and mobility limitations, reduced hearing and vision, as well as the fatigue and stress that often accompany travel and a lack of connectivity (including web connectivity) among different modes of transport (e.g., train to plane). Importantly, many of these obstacles apply to all types of travellers but may impact older travellers to a greater extent.

There are also opportunities associated with travel by older adults, who may travel for longer periods of time, during off-peak periods, and with others. In addition to economic opportunities, an inclusive transportation system could support equitable access to all users, which should be encouraged in an age-friendly society.

Obstacles encountered over the course of a trip, and potential opportunities to overcome them, are organized in this chapter by the stages of a journey (Figure 4.1), which begins with the planning phase. While most of the available literature pertains to air travel, the Panel sought to include obstacles related to train and bus travel as well. Many of the obstacles, and opportunities for minimizing their impact, are drawn from literature on disability; it is important to emphasize that this literature does not encompass all the needs of all older travellers. Automobile travel is also included briefly in the discussion as it relates to the completion of a door-through-door journey. Obstacles specific to rural and remote communities are also discussed, especially as they relate to accessing terminals and stations (Section 4.2.4).

While looking at ways to improve door-through-door journeys in Canada, the Panel considered the heterogeneous nature of older adults. It also focused on opportunities to improve the Canadian transportation system that meet the following criteria:

- Minimizing physical, visual, auditory, cognitive, and social obstacles
- Improving safety and security
- Improving ease of travel
- Demonstrating impact
- Demonstrating potential for integration across modes of transportation
- Promoting social equity and connectedness

Wherever possible, the costs associated with innovations that minimize obstacles, and the sector(s) responsible for their implementation, are presented. Importantly, the Panel did not seek to rank these opportunities, but instead selected those based on the best available evidence. Many of the opportunities discussed in this chapter can be implemented using the principles of inclusive design (Section 5.3). Their potential benefits extend beyond older travellers and make travel easier for everyone. This is significant, as accessible transportation is needed to create an inclusive society that “respects people’s needs and differences” (AGE, 2002).

Chapter 4 returns to the personas introduced in Chapter 3 to demonstrate practices and examples that support obstacle-free travel for older travellers (scenarios, shown in blue boxes). At the end of this chapter, the Panel presents

a table summarizing the obstacles discussed, along with possible opportunities to minimize them, and the stakeholder(s) responsible for implementing these opportunities (Table 4.1). This chapter responds to the charge by identifying international trends and promising practices for accommodating the aging population, and by providing examples of new technologies and innovative solutions that address obstacles faced by older travellers.

## **4.1 PLANNING THE JOURNEY**

Planning for travel can be a stressful process. Because planning, booking, paying for, and tracking travel are increasingly done through apps and websites, and because transit systems are becoming more automated, older travellers unfamiliar with these changes may feel daunted. It may be that future cohorts will be more at ease with such technologies, but there will always be a number of individuals who are not comfortable using these devices and apps, who cannot use or access technology due to physical disabilities, or who cannot afford to own a smartphone or other portable electronic device. Other obstacles to planning a trip include cost and a lack of (or lack of awareness of) specialized travel services for older travellers.

### **4.1.1 Accessible Information**

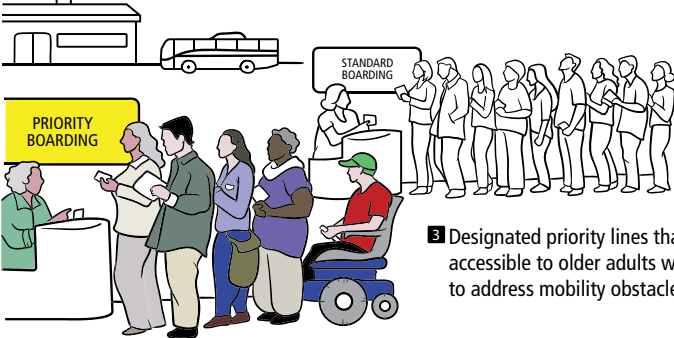
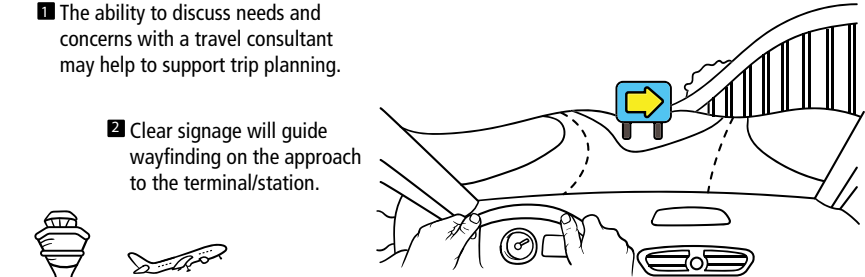
Remote access assistance during the planning process, either by phone or online, may allow more travellers to better use the transportation system by offering information and potential solutions to concerns pre-trip. Effective information access requires that data be presented in different modes (e.g., audio, visual) as well as in a number of languages. It also requires presenting material on resources related to accessibility and available travel services, and the equitable communication of all relevant information. Not only should information be accessible, it also needs to be reliable such that it is up to date and accurately depicts travel outcomes.

The U.S. Transportation Security Administration (TSA) has a helpline called TSA Cares that is designated to assist travellers with disabilities, medical conditions, and other special circumstances requiring additional assistance during the security screening process (TSA, n.d.). Travellers may call TSA Cares in advance of their trip with questions about what to expect at the checkpoint, as well as screening policies and procedures (TSA, n.d.). Currently, TSA Cares is for travellers with disabilities, but this type of program could be adapted to assist older travellers through the security screening process. In Canada, CATSA is responsible for screening air travellers and their bags efficiently and effectively (CATSA, n.d.-b). While CATSA does have a web page devoted specifically to older travellers going through screening checkpoints (CATSA, n.d.-a), they do not have any specialized programs such as TSA Cares devoted to assisting travellers during the planning phase of a journey.

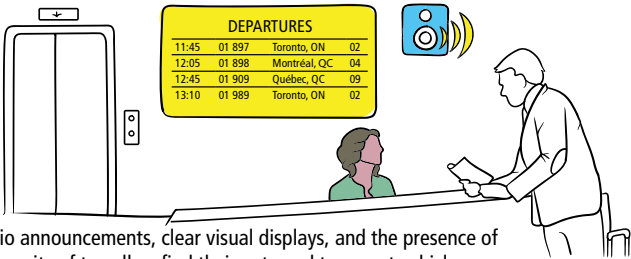


**1** The ability to discuss needs and concerns with a travel consultant may help to support trip planning.

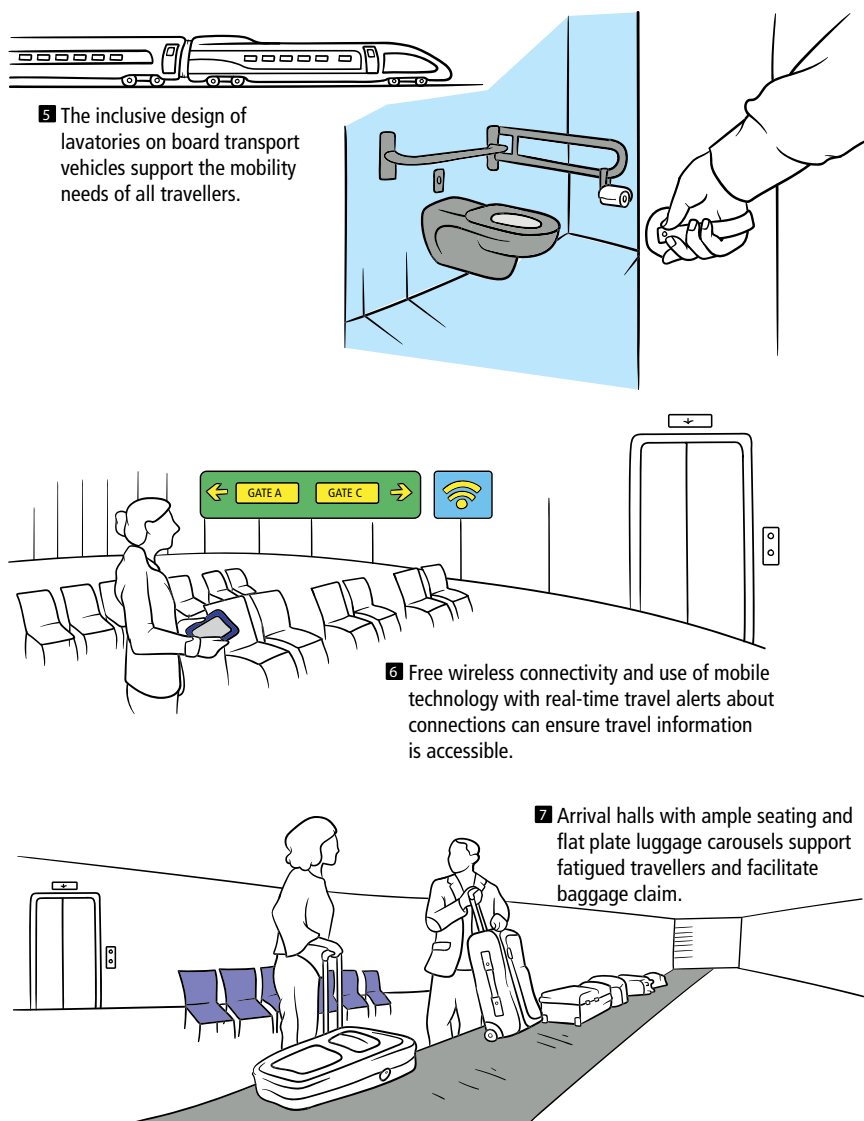
**2** Clear signage will guide wayfinding on the approach to the terminal/station.



**3** Designated priority lines that are accessible to older adults will help to address mobility obstacles and fatigue.



**4** Non-overlapping audio announcements, clear visual displays, and the presence of service staff help a diversity of travellers find their gate and transport vehicle.



*Figure 4.1*

### **Selected Opportunities that May Improve a Door-Through-Door Journey for Older Travellers**

This figure shows example activities in the stages of a door-through-door journey. Selected opportunities that could minimize certain obstacles to travel for older adults are illustrated in colour. The opportunities shown are examples only, and are not meant to indicate the best or only options.

Online hubs, such as websites that provide accessible, centralized, “one-stop-shops” for information, also represent an opportunity to simplify travel. Equipping travellers with the tools they need for successful trip planning may promote independence, engagement, and empowerment, while providing appropriate information to support effective movement from one mode of transport to another. Travel planning websites can provide suggested multimodal routes to complete door-through-door travel. For example, websites that provide trip planning services, including flight, train, bus, ferry, and driving options with approximate fares and travel times (e.g., Rome2rio, 2017), already exist. However, this and other similar sites do not offer integrated joint ticketing options.

Specific cities have also developed websites that offer trip planning services. Transport for London’s website provides trip planning services between addresses, guidance on using public transport (e.g., national rail, intercity rail and bus, river bus, and chartered buses), and information about cycling and walking routes in London, United Kingdom (TfL, n.d.-b). Routes can also be selected by level of accessibility (e.g., routes that avoid escalators or a lot of walking) or by the fewest number of changes or connections (TfL, n.d.-b). In the United States, Alaska Airlines has several accessibility resources, including dedicated web pages and a telephone line outlining rules and regulations pertaining to accessibility topics, travel services, and weight restrictions for mobility devices (Alaska Airlines, 2017a). The airline also operates the online customer survey Alaska Listens and states that they use all customer feedback to “shape the future of Alaska Airlines;” it is, however, unclear to what extent or how customer feedback has been incorporated in practice (Alaska Airlines, 2017b, 2017c).

In Canada, Metrolinx is an agency created by the Government of Ontario “to improve the coordination and integration of all modes of transportation in the Greater Toronto and Hamilton Area” (Metrolinx, n.d.). It has been working with research partners such as OCAD University’s Inclusive Design Research Centre to implement better information and communication accessibility (Metrolinx, 2014). Changes to increase the accessibility of its website have included the use of high-colour contrast, quick links to resize text, and recognition of popular screen readers (Metrolinx, 2014).

Some travel websites are beginning to recognize the specific needs of older travellers. Tripadvisor.com includes age in its members’ profiles and has established a forum specific to older travellers (defined as 50+) in which users can ask a question or offer comments and advice on a specific topic (Kazemini *et al.*, 2015). In this forum, the two main pre-travel obstacles identified are concerns about physical limitations and travelling without a companion



(Kazeminia *et al.*, 2015). There is an opportunity for the travel industry to develop information for families who travel with older family members, as well as for older adults travelling alone, both of whom may face unique obstacles throughout the course of a journey.

Information relevant for older travellers can also come from accreditation organizations and resource guides that identify destinations compliant with accessibility standards. In Canada, there are several apps and resource guides to help travellers evaluate the physical accessibility and inclusivity of travel destinations (iTunes, 2017a, 2017c, 2017d; Access Now, n.d.), as well as initiatives that attempt to harmonize existing data within a single platform (Accessibility.Cloud, n.d.).

Older adults may be concerned with how various health conditions affect their ability to travel. Travel providers could introduce programs that assess a potential passenger's fitness to fly based on self-disclosed information. This program would aim to provide peace of mind to travellers with health conditions, and prevent onboard medical emergencies. For example, while British Airways does not have a specific program, it does have a section on its website devoted to travel health information. The website lists common surgeries and medical conditions, and for each notes whether it is necessary for passengers to contact their Passenger Medical Clearance Unit before flying (BA, n.d.). Similarly, companies such as Medaire offer passenger fit-to-fly assessments over the phone (Meditaire, n.d.).

#### **4.1.2 Helpful In-Person Services for Older Travellers**

Travel companies are well positioned to organize trips for older adults wanting to travel individually, with family members, or within a group of peers. Importantly, in the view of the Panel, travel consultants can be most effective if they are aware of the needs and preferences of older travellers and avoid ageist attitudes. Organized group trips provide companions and decrease planning requirements, which may increase the number of older travellers, helping companies realize an economic opportunity. Additionally, group travel can benefit both individuals and groups by providing social inclusion for older adults. Some companies already tailor their services to older travellers. For instance, certain tour companies offer travel packages for older travellers (e.g., SDT, n.d.-a) and operate according to policies within an accessible service plan that adheres to the requirements of the *Accessibility for Ontarians with Disabilities Act* (SDT, n.d.-b). There is also a not-for-profit education organization founded on the belief that "lifelong learning is a vital part of overall wellbeing" (Road Scholar, n.d.-b). It offers educational opportunities (tours) typically for travellers over 50 years of age (Road Scholar, n.d.-a). Importantly, many of this organization's offerings are tailored to older adults who wish to travel with their grandchildren (Road Scholar, n.d.-a).

Encouraging travel companies to develop group tours and to deliver responsive, age-friendly customer service that promotes an equitable travel culture would be a benefit not only to older travellers but to everyone who wishes to travel. These services could accommodate the various needs of older travellers beyond accessibility issues, including improving the safety of journeys and the quality of the overall travel experience. By developing these services and tours, travel consultants have the opportunity to minimize obstacles during the planning process, and aid older adults wishing to travel. As many older adults travel with their families, travel companies and consultants can aid family members and caregivers in planning trips that use age-friendly transport and tours, but which are appropriate for all family members.

A single, unified ticket that can be used for multiple modes of transit along a single journey (i.e., joint ticketing) could simplify planning for all travellers. Such a ticket may reduce the number of purchasing points and check-in processes over the course of a journey. This opportunity is illustrated in Patrick's scenario. Ideally, joint ticketing could foster greater coordination among modes of transport; flight delays, for example, could be seamlessly accounted for in the latter half of the journey (e.g., delayed travellers are automatically bumped to a later flight/train/bus). Journeys are complicated by a lack of connectivity of rail and bus terminals from airports in most Canadian cities. There currently exists no option to purchase a single ticket for travel across federally regulated modes of transportation in Canada. Joint ticketing between certain modes is available through some Canadian municipal transit providers. In British Columbia, TransLink tickets provide access to municipal buses, trains, and passenger ferries within Metro Vancouver (TransLink, 2017b). Ideally, a traveller could purchase a ticket that includes, for example, an airline ticket and travel on the Union Pearson Express train from Toronto Pearson International Airport to the city centre. KLM Royal Dutch Airlines in the Netherlands offers joint ticketing options for travellers that include connections to train and bus services, both within the Netherlands and across Europe (KLM, 2017).

If travellers can identify services in the planning stage that will help with physical tasks during the journey (e.g., baggage handling), concerns about the trip may be alleviated and travel itself becomes more appealing. For example:

- Hong Kong International Airport offers remote options for baggage transport, including free baggage check-in at two major central train stations (MTR, 2016), or home baggage pickup and delivery for travellers in metropolitan Hong Kong (for approximately \$86 per trip for up to four regular-size luggage items as of June 2017 (WFS, n.d.)).

- At Honolulu International Airport, baggage aid services are available via a drive-through curbside check-in option (ACRP, 2008), while porter services are offered at Vancouver International Airport for a flat fee of \$10 for up to three items, as of April 2017 (YVR, 2017).
- Swiss Travel System offers several luggage transport options including routing baggage from the airport to a destination railway station (for approximately \$70 for a single piece of luggage as of April 2017). For an additional fee, luggage is delivered directly to a chosen destination address in Switzerland (Rail Europe, 2017; STS, n.d.).

These types of services can also support multimodal travel. It should be noted that, while these services enable baggage-free travel for some, most options are associated with additional costs and therefore may not be available to all travellers.

#### 4.1.3 Cost of Travel

The costs associated with travel can be an obstacle for older travellers (Kazeminia *et al.*, 2015); an important metric of diversity in the aging population is difference in income levels (Viant, 1993). Many services or accommodations that allow for travel, such as baggage transport services and travel insurance, come at an additional cost. Moreover, low-cost travel may not be age-friendly and may increase the length of a total journey, involve additional transfers, and require paying for advanced assigned seating and baggage.

While the one-person-one-fare policy benefits older travellers with disabilities flying with Air Canada and WestJet, it does not apply across all Canadian commercial air carriers (CCD, 2016), meaning that travellers using other carriers may have to pay for a companion to accompany them on their trip. This prevents travel for those who cannot afford to pay the additional fare and have to fly on a different airline. Older travellers may also prefer to travel with family, and the additional costs often associated with extra services that enable these passengers to minimize obstacles may be prohibitive. There are also obstacles for travellers who depend on a service animal. Service animals may be allowed on board, but regulation is not clear about which animals are allowed on travel vehicles. The regulation states that a service animal can be accepted without a fee if it is “certified, in writing, as having been trained to assist a person with a disability by a professional service animal institution,” (GC, 2012) but the definition of such an institution is unclear.

**PATRICK (65 years old)**  
**Alberta**

Patrick is pleased to find a “Book multiple methods of travel” option on the airline website where he can purchase a single ticket for both air and train. He calls the toll-free number and reaches a travel support agent who explains how Patrick and Lauren can connect from the Edmonton airport to the train station. Patrick is thrilled to learn that, by booking a common ticket, he and Lauren will only need to check their bags once, because bags will automatically be transferred from the plane to the train.



On their departure date, Patrick and Lauren drive to the Calgary airport and park in long-term parking. They check their bags here, including golf clubs, and an attendant confirms that their bags will be transferred directly from their plane to their train. Patrick and Lauren then catch a shuttle to airport departures; while on the shuttle Lauren checks the up-to-date status of their flight on her smartphone and sees that their plane is running on time.

Aboard their flight, Patrick and Lauren charge their smartphones and tablets and connect to the in-flight WIFI network, allowing them to check on the status of their train. Patrick and Lauren have a comfortable flight but, as they land in Edmonton, the captain announces a slight delay in deplaning passengers due to weather. A flight attendant approaches and explains that, as they will be missing their scheduled shuttle to the train station, their tickets have automatically shifted to the next shuttle, which leaves 20 minutes later. Relieved, Patrick and Lauren gather their carry-on items and, once they deplane, are able to easily follow the clear signage directing them to the shuttle stop. They show the driver their tickets and board the shuttle, which arrives promptly at the Edmonton train station 45 minutes before their train is set to depart. They show the rail attendant their tickets, board the train, and are guided to their private overnight cabin. Settling in, they see they have received an email from Rebecca, who was notified of their travel status: “Great that you caught your train in spite of the weather. See you tomorrow!”

Patrick and Lauren arrive the next morning at Vancouver’s central train station after their day-long journey. They alight the train and head to the baggage area, where they are happy to see their bags have arrived in good condition. A friendly porter offers them help loading their suitcases and golfing equipment onto a luggage cart. Excitedly, Patrick and Lauren follow the signs to the designated pickup area to meet their daughter.

For some individuals, purchasing travel insurance for medical emergencies may be unaffordable (or unavailable) due to pre-existing health conditions (Kazeminia *et al.*, 2015). The inability to acquire medical insurance is a particular obstacle for travel outside of Canada, because within Canada provincial and territorial healthcare systems provide medical coverage. The inability to afford medical insurance creates inequality among the older adult demographic. Affluent older travellers can afford travel insurance as well as upgrades, such as baggage transport services, that allow them to more easily overcome travel obstacles; these services may not be accessible to those with low incomes.

## **4.2 TRAVELLING FROM HOME TO TERMINAL/STATION**

Older travellers who can no longer drive may rely on friends or family members to drive them from home to the terminal/station. If they instead rely on public transit, then buses, trams, subways, taxis, or ridesharing programs must be accessible. More broadly, wayfinding issues — that is, knowing how to get from one point to another — may be affected by physical and sensory limitations, resulting in obstacles regardless of method of transit to the terminal/station.

### **4.2.1 Transit to Terminal/Station**

A lack of accessible transit that promotes door-through-door service is an obstacle for older travellers. Getting to terminals and stations is often complicated by the fact that some are situated in remote or hard-to-reach geographical locations (Box 4.1).

#### **Box 4.1**

##### **Moving the Location of the Edmonton Intercity Bus Station**

In 2016, Greyhound Canada relocated the Edmonton intercity bus station from the downtown core to the Edmonton VIA Rail station, located approximately five kilometres away. While the new site does provide intermodal transportation for Greyhound and VIA Rail, it was not easily accessed by municipal transit as of February 2017. The nearest public transit stop is over a kilometre away with no sidewalks, and the stop itself is served by only a single route. Although Greyhound offers a shuttle from the site of the old downtown bus station, it only runs twice daily, which means cab transit is sometimes the only option for travellers. This may present a significant obstacle to would-be intercity bus users who are unable to afford cab fare, which is much more expensive than bus fare. This example highlights the importance of connected and accessible transit modality options that allow door-through-door travel, whose absence creates obstacles for travellers, particularly those of limited financial means.

(Adams, 2016; Mah, 2016; Kendrick, 2017)

Developing companion ride programs to meet the needs of older travellers, such as community volunteer driver services and specialized training for drivers, may make cost-effective municipal transit more accessible for the older traveller. Community services can also be used to support older travellers in accessing existing public transit. Several successful models are already in place:

- The Bus Buddy program in Eugene, Oregon pairs regular volunteer bus users (Bus Buddies) with riders requesting assistance with the transit system through local senior centres (Wacker & Roberto, 2014). Bus Buddies provide help with planning the trip, teach people about bus routes, and accompany riders on the bus journey itself (LTD, n.d.).
- The Attaining Energy-Efficient Mobility of an Ageing Society (AENEAS) project supported urban mobility initiatives for older people in several European cities (AENEAS, n.d.-a). In Salzburg, Austria, for instance, a public transport training program introduced older adults to the local transit system, provided information, took participants on a mock journey, and trained bus drivers to support the needs of older travellers (AENEAS, n.d.-b).
- In Paris, the Compagnons du Voyage is a service offering older adults personal accompaniment for journeys on public transport; the cost for older adults (60+) is approximately \$32 per hour as of 2017 (Les Compagnons du Voyage, 2017; AENEAS, n.d.-c).

Car-sharing and ride-hailing services may provide another cost-effective means of accessing terminals/stations, but these programs present obstacles for older adults who do not use apps. Additionally, competition among ride-hailing services, taxis, and other publicly subsidized operators may result in a decreased number of available vehicles overall, and may also decrease the number of accessible vehicles in their fleets — many jurisdictions already struggle to increase the number of accessible taxis (TRB, 2016). However, ride-hailing providers are recognizing the economic opportunity of transporting older adults. Uber, for example, has stated that it will be providing free tutorials explaining how to use its app at senior centres and retirement communities in the United States; it has been noted that a large number of older adults already use the Uber app (Dailey, 2017). The number of older adults who use ride-hailing providers will likely increase as future cohorts become more comfortable using smartphones. In Toronto, Uber has partnered with retirement home operator Revera to operate UberCentral, a service that allows businesses to book rides for customers without smartphones (Erllichman, 2016); it is also working with the AGE-WELL network to provide support in the training of drivers for older adults and people with disabilities (AGE-WELL, 2017).

Mobility as a Service (MaaS) combines all options from different transport providers and different modes of travel into a single mobile service. The movement was founded in Helsinki, with the goal of providing an alternative to owning a car that was so appealing that residents would give up their personal vehicles (MaaS Global, n.d.). Since 2016, travellers in Helsinki can use an app to plan and pay for all modes of transportation in the city (public or private) (Goodall *et al.*, 2017). As it takes into account not only real-time conditions within transport networks, but also each user's own preferences, this approach allows for more user-centred mobility. While the MaaS movement is most prominent in Helsinki, cities across Europe (Paris, Barcelona, Eindhoven, Gothenburg, Montpellier, Vienna, and Hanover) and the United States (Las Vegas, Los Angeles, and Denver) have piloted their own local versions. MaaS approaches combine ride-hailing service apps, such as Uber, with journey planning apps that allow users to compare different modal options, in a single common platform (Goodall *et al.*, 2017).

While ride-hailing and MaaS apps may bring opportunities for increased mobility for older adults, especially in cities, there is also a risk it may replace other options, leaving older adults and others who do not use technology to access transportation at a loss of services. There is also the possibility that ride-hailing services may replace other transit options in rural areas, but there is little data as to how effective this change might be with respect to the mobility of rural residents.

#### 4.2.2 Driving and Parking Challenges

Older travellers who drive to terminals/stations can be supported by a number of innovations, such as simple vehicle modifications, assistive technologies, or autonomous vehicles (i.e., self-guiding automobiles). Vehicle modifications that enable prolonged driving by older adults and enhance the safety and usability of cars include easy-lock belts or steering wheel covers to improve grip (Dickerson *et al.*, 2007). New innovations, such as assistive technologies that sense the environment around the vehicle (Abraham *et al.*, 2016), and learning-capable systems that modify vehicle behaviour based on past experience (Dimitrakopoulos & Demestichas, 2010), could support safe, independent vehicle use among older adults. As of 2017, autonomous vehicles are not currently available for purchase, but may allow for continued independent vehicle ownership by older adults in the future. Autonomous vehicles may also improve safety. Canadian manufacturers are actively developing autonomous vehicles (Ontario Ministry of Transportation, 2016), but it is important to note that, even if autonomous vehicles become available, older adults may still require help getting from their house and into the vehicle, and getting out of the vehicle at their destination. Therefore human interactions will still be necessary.

Wayfinding and parking at the terminal/station may present obstacles for many travellers, including older adults. The signage on the approach to the terminal/station may be complicated due to a number of arrival and departure options, a number of available parking options (e.g., short- and long-term), and rental car return options (Mein *et al.*, 2014); these obstacles may be more significant for older travellers with visual or cognitive limitations. Signage may also be an obstacle if there are several modes of transit or terminals/stations within a single area, since age-related cognitive changes make it difficult to interpret multiple sources of information (Finucane, 2008; Kazeminia *et al.*, 2015). Doing an inventory of all signs surrounding the approach to the terminal/station and removing redundant signs, as well as ensuring signs are clear, consistent, and similar to those in the surrounding municipality, may aid with wayfinding (Mein *et al.*, 2014).

The financial cost associated with parking near the terminal/station can also be prohibitive for travellers on fixed incomes (Mein *et al.*, 2014), posing an obstacle for those who have reduced mobility. Generally, the cost of parking increases the closer one is to the terminal/station, and therefore older travellers on limited incomes may use more remote parking facilities. These parking lots can be large, subject to various weather conditions, and involve long waits for shuttles. If the lot is a multi-level structure, it may be difficult to identify the best area to park in order to minimize walking distance to the terminal/station. Baggage carts may not be available in parking garages, posing another obstacle for baggage transport. Having both baggage carts and wheelchairs available in parking garages may help older travellers. Similarly, ensuring ramps are used at level changes for all pedestrian routes in parking garages would help people safely arrive in the terminal/station. Continued development of apps that aid with wayfinding to available parking spaces, and which assist in navigating back to a personal vehicle at the end of a trip, may help mitigate parking challenges (Mein *et al.*, 2014).

#### **4.2.3 Management of Luggage**

Once a traveller reaches a terminal/station in Canada, there is often a lack of assistance prior to check-in (CCD, 2016) unlike in the European Union, where assistance is required from designated arrival points to departure points (EU, 2006) (Section 4.3.1). This lack of assistance may present a more significant obstacle for older travellers or families travelling with older adults, who require assistance with mobility aids or baggage (Section 4.1.2). Currently, Canadian regulations require help (e.g., with baggage) only upon check-in, although some carriers or airports may choose to provide assistance upon request (CTA, Expert testimony, 2016). One simple practice to help overcome this obstacle is providing baggage carts in parking lots and garages for those who use their



personal vehicle to reach the terminal/station. The benefits of having options available to help travellers unload and check their luggage are shown in Marie's scenario.

Although data are scarce, the challenges of managing luggage when travelling by rail or bus may be even greater than those encountered while travelling by air. Level boarding is not a requirement for these modes of travel (Ashby, 2015) and therefore travellers may be required to carry luggage up and down stairs.

### **MARIE (89 years old)** **Nova Scotia**

Jackie decides to book the family's flights by phone because she has several questions. An agent explains that all personnel are trained to offer support and describes the procedures for getting Marie on and off the plane, as well as the emergency medical protocols. The agent books the family's tickets, with a note that additional accessibility services are required, and directs Jackie to a website offering travel health insurance for high-risk travellers. The option available for Marie is expensive, but because of the one-time nature of the trip, Jackie opts to purchase it along with insurance for herself and Fred.



On the departure date, Jackie drives herself, Fred, and Marie to the airport, following the signs to the curbside check-in and baggage drop area. She has booked valet parking service, which is free for persons with mobility devices and their travel companions. She drives into the clearly marked area and agents approach with a baggage trolley. The agents scan the family's tickets, unload their luggage, affix baggage tags, and give Fred their boarding passes while Jackie helps Marie get into her wheelchair. Once inside the terminal, the family follows the signs to the priority line at security. After their documents are scanned, an agent helps Fred load their carry-on items onto the conveyer belt while Jackie goes through the metal detector. She then stands nearby so she can be clearly seen by Marie, who is pushed through the scanner by a security agent who asks Marie about her trip.

*continued on next page*

At their departure gate, the flight attendant sees Marie and lets her know when it is time to board, since she, Fred, and Jackie will be boarding first. Once Marie reaches the plane, two attendants transfer her safely into a comfortable onboard wheelchair and safely stow her own wheelchair. The attendants escort Marie, Fred, and Jackie to their adjacent seats, which have extra legroom. Although the attendant offers to help, Marie is comfortable moving from the onboard wheelchair to the seat by herself, using Fred for support. The attendant points out the accessible lavatory and informs them that all flight staff are trained to assist if needed.

Marie finds using the lavatory mid-flight easier than expected because of ample grab rails, but is reassured that Jackie has room to comfortably stand just outside. Upon their arrival, the family deplanes last, and Marie is helped into her personal wheelchair just outside the plane doors. Tired from the journey, she needs some time to regroup and sits with Jackie in the baggage claim area where there is ample seating, while Fred collects their bags. He loads the bags onto a trolley and the family moves to the nearby car rental counter. They pick up their accessible rental van and the rental car staff load their luggage while Fred helps Marie into her seat. The family departs the airport for the short drive to meet Marie's sister.

#### **4.2.4 Lack of Transport to Terminals/Stations Due to Geographical Location**

The geographical location of one's home may increasingly act as an obstacle to travel. Many older adults in countries from the Organisation for Economic Co-operation and Development (OECD) have spent their lives in urban areas, and will "age in place" with public transit and services supporting their transportation needs (OECD, 2001). But there are also many middle-aged adults who inhabit low-density suburbs, where car ownership is essential for daily living (OECD, 2001). These adults will likely encounter obstacles to travel when they stop driving (OECD, 2001). In Canada, older adults in rural locations are even more dependent on individual automobile travel (TC, 2006; Marr, 2015), so as they age their geographical location may act as an additional obstacle to accessing the federal transportation system.

A series of focus groups of older adults (aged 60+) living in 10 communities in 8 provinces, varying in size from fewer than 600 people to approximately 5,000 people, and representing varying degrees of rurality and remoteness, was administered by the Public Health Agency of Canada in 2007 (PHAC, 2011). These focus groups reflected a range of ages, physical abilities, and socioeconomic statuses. The research found that most participating older

adults owned and drove a car for transportation. Once driving was no longer possible, these individuals were concerned about a loss of independence due to obstacles such as limited public transportation, poor scheduling and connectivity of public transportation, and a lack of accessible transit (PHAC, 2011). Additionally, underutilization of existing public transit services (e.g., handi-vans) due to small population sizes sometimes results in the cancellation of these services due to low ridership (PHAC, 2011).

Residents of rural and remote communities face additional transportation obstacles because they generally must travel longer distances, as people and services are more spread out (Marr, 2015). Lengthier distances may result in higher costs for users of both personal vehicles and other modes of transportation, making travel particularly challenging (Marr, 2015). With lower population densities, smaller communities in rural or remote areas may not be able to reach the economies of scale needed for some types of transportation infrastructure, such as public transit (TC, 2006). Carpooling initiatives can also be hindered because there are fewer individuals to contribute to the pool (TC, 2006). If transportation systems are present, they are not necessarily accessibly designed — Canadian accessibility provisions only apply to terminals and stations (air, rail, and ferry) that have greater than 10,000 passengers per year (Ashby, 2015).

The need for intercity buses linking rural and remote communities has been recognized by various provincial and territorial governments. The bus service of the Saskatchewan Transportation Company (STC) was an example of a province-wide bus system connecting travellers in rural and remote communities to other communities across the province, and to Canada-wide transportation hubs, such as Greyhound Canada stations. The STC was a Crown corporation subsidized by the provincial government and acted as the only intercity carrier in many rural communities in the province, providing transportation to, for example, lower income individuals (who made up 70% of ridership) and older adults (STC, 2016). In May 2017, the Saskatchewan government shut down the service because of declining ridership and increasing operational costs (Bains, 2017; CBC, 2017b). This decision highlights a challenge inherent in rural and remote communities: although there is a demonstrated need for services and often customer satisfaction (the most recent STC annual report noted a 93% customer satisfaction rating), low population density still makes these services economically unviable (Bains, 2017; STC, 2017). This closure has resulted in the elimination of transportation options for individuals in rural and remote communities who relied on the STC as a means of transport. NDP MLA Cathy Sproule noted this will have a disproportionately negative impact on older adults (Warick, 2017).

In British Columbia, First Nations, municipalities, and the provincial government have invested in the improvement of transportation infrastructure, accessibility, and safety along Highway 16, which is known as the *Highway of Tears* because it has been the site of numerous cases of missing and murdered Indigenous women (CSFS, 2006; CBC, 2017a). To improve access to transportation services, funding has been allotted for an intercity bus service, a First Nations driver training program, safety infrastructure (e.g., transit shelters with camera surveillance), and collaborative work with services such as BC Transit to support connectivity with existing modes and systems of transportation across the province (Bains, 2017; Gov. of BC, 2017). The first route, between Smithers and Moricetown, began operating in early 2017, with two additional routes (Burns Lake to Prince George; Burns Lake to Smithers) added in June 2017 (CBC, 2017a).

Northern communities are often remote and although transportation infrastructure in these communities has high operating costs (as they depend on air travel), basic infrastructure development can present an economic opportunity by attracting further investment (TC, 2016g, 2016h). For example, investment in transportation infrastructure in the North could provide opportunities for increased travel and tourism (ICC, 2014). Accessible transportation may allow for the development of new tourism destinations in Canada's northern territories. Transportation growth and development also present opportunities for increased Indigenous participation in decision-making. For example, the ICC supports transportation development in the Arctic but also states that development must occur sustainably and with consideration of environmental effects (ICC, 2014). The availability of data relating to Indigenous transportation needs is negligible and it is therefore difficult to present a fair account of obstacles present within Indigenous communities. More research in this area is needed, as older adults in Indigenous communities face distinctive obstacles related to transportation. The Panel also stresses the importance of developing potential solutions to transportation obstacles in consultation with Indigenous Peoples.

#### **4.3 GETTING FROM TERMINAL/STATION TO TRANSPORT VEHICLE**

Arriving at the check-in area of a terminal/station can be overwhelming. These areas tend to be large and loud, and they are often filled with people and a lot of visual information (Mein *et al.*, 2014). This environment may be disorienting and intimidating, making wayfinding difficult, including for the older traveller. It may also require travellers to walk long distances or stand for long periods of time. While many of the obstacles presented in this section are drawn from research related to air travel, they are applicable to other modes of transport, since check-in and getting to transportation vehicles are similar regardless of mode.

### 4.3.1 Wayfinding

Customer service and assistance programs tailored to the specific needs of older travellers, and which do so on demand, can make travelling more comfortable, convenient, and accessible. When terminals/stations are understaffed, travellers may have a harder time figuring out ticket purchasing and the boarding and de-boarding processes (CCD, 2016). Language can also represent an obstacle to travel, as older adults who do not speak English or French may have trouble communicating with agents and staff in terminals and stations. Another obstacle encountered while wayfinding may be staff or volunteers with ageist attitudes. Ensuring the kiosk area is staffed by agents trained in appropriate and respectful communication can go a long way in minimizing obstacles and creating a convenient check-in process (Mein *et al.*, 2014).

Ambassadors represent another opportunity to develop innovative, age-friendly customer service practices that enable older travellers to better use, and feel more comfortable using, the transportation system by providing information and assisting with wayfinding and check-in. Some of these benefits are illustrated in Yumi's scenario. The YVR Green Coats program, in Vancouver, and the YYC White Hats program, in Calgary, are Canadian examples of ambassadors facilitating wayfinding for travellers within a terminal/station (YVR, 2011; YYC, n.d.). The Green Coats ambassador program at the Vancouver International Airport is a general customer care and airport welcoming volunteer group that provides information and assistance with travel and transportation (YVR, 2011). Green Coats receive mandatory training in providing information on all airport facilities and services, as well as travel destinations in Vancouver and elsewhere in British Columbia. The volunteers are required to take a welcoming, friendly, and proactive approach to passenger support (e.g., by offering assistance to passengers in the airport). The Green Coats can help all travellers, including older adults, overcome information-related and wayfinding obstacles, in turn increasing the ease of travel and alleviating stress (YVR, 2011). Unfortunately, metrics related to the success of ambassador programs are not publicly available.

As noted in Section 4.2.3, European airports are responsible for continuous assistance from the point of arrival at a terminal to the point of exit for passengers with disabilities (Frye, 2015a). The support begins from designated assistance points within the airport perimeter, such as long-term parking, train and bus stations, or established drop-off areas; it is here travellers are offered extra help (Frye, 2015a). Importantly, continuous services also allow for coordinated assistance from curbside to transport vehicle and back again, and are particularly helpful for those travelling alone or with heavy luggage.

## **YUMI (73 years old)**

### ***British Columbia***

With her travel dates set, Yumi is determined to learn how to travel to Seattle independently. She phones a customer service line for bus directions to the Vancouver train station and discovers a bus can drop her directly in front of the station, where she hopes to inquire about the train journey.



The next day, Yumi alights the bus at the train station and feels slightly overwhelmed at how big it seems. A young woman wearing a green vest approaches and asks if Yumi needs help. Learning it is Yumi's first time taking the train, the volunteer walks her to the ticketing area. The ticketing agent answers all of Yumi's questions, including what foods are prohibited at the border, and searches for the lowest fare on Yumi's preferred dates. Yumi is pleased that the round trip ticket turns out to be less expensive than she feared because of a seniors' discount and her ability to travel outside peak times. Yumi purchases a ticket for two weeks' time, requesting a window seat near the baggage storage area. The agent informs Yumi that her train ticket entitles her to free bus fare to and from the train station on the days of her journey. The agent links Misato's cell phone number to Yumi's train ticket, which will send Misato text message alerts about Yumi's train status and arrival time. Yumi is relieved she won't have to rely on her cell phone in the United States. The agent hands Yumi her tickets, along with several inserts that outline baggage guidelines and a border-crossing quick guide. The agent points out Yumi's train number on her ticket and the large electronic board where she will check her platform number. As she walks to the bus stop, Yumi notices the large signs indicating each platform number and leaves the station feeling confident about the trip.

On her departure date, Yumi rides the bus to the train station. Entering the station, she heads straight toward the electronic board to check her platform number. She sees that her train is departing from Platform 3 and follows the signs to the platform area. On Platform 3, she sees the sign on the train indicating "Seattle" and gets her ticket out to board the train. A staff member scans Yumi's ticket and helps her locate her seat. Yumi is pleased the train has level boarding, so she does not need help getting her suitcase on board and to the storage area. Yumi enjoys the train trip; she eats her packed lunch while admiring the passing scenery and, thanks to good preparation, the border check goes smoothly. When the train arrives in Seattle, Yumi collects her suitcase, leaves the train, and follows the other passengers to the station exit, where she sees a sign for the pick-up area. As she approaches, she is thrilled to spot Misato getting out of her car to come greet her.

### 4.3.2 Using Information Communication Technologies for Check-In

The increased presence of self-serve, touchscreen kiosks for a variety of services, such as check-in and ticket purchasing, may pose an obstacle to individuals with sensory impairments who may have difficulty reading kiosk screens or discerning audio commands in large, noisy terminals and stations (Mein *et al.*, 2014). Kiosks may also be an obstacle to people with physical or sensory limitations (CCD, 2014). Additionally, a lack of familiarity or comfort with technology may make the process even more stressful for a wide range of older adults, leading some travellers to prefer interacting with a person.

### 4.3.3 Travelling with Baggage, Aids, and Medical Equipment

Domestic air carriers are now charging travellers to check baggage. This poses an obstacle to older travellers who may need to travel with various aids, devices, and health supplies (CCD, 2014) and those who have trouble carrying luggage. The size and weight of mobility aids, combined with the decreasing size of regional aircrafts, may prevent some wheeled mobility devices from fitting through doors or in storage compartments (CTA, Expert testimony, 2016).

Accessibility rules in Canada do dictate that service providers are required to carry mobility aids at no extra charge (CTA, 2015b). Transportation service providers or airport authorities and station operators could also offer travel-focused mobility aids, such as wheelchairs, scooters, canes, and walkers, designed for use in terminals/stations and vehicles, in order to improve accessibility and travel across modalities. For example, one type of airport wheelchair is designed to support the movement of people with mobility needs through terminals/stations and integrates a large baggage storage area into the chair itself (Staxi, n.d.-a). A related device is a boarding chair designed for safely transporting passengers onto aircraft through the use of a front and back end lifting system (Staxi, n.d.-b). Inclusive accessibility requires having enough devices in terminals/stations so all travellers can use them when needed.

### 4.3.4 Security-Screening Checkpoint

In some cases, especially when flying, travellers must pass through a security-screening checkpoint after check-in (or prior to check-in when visiting facilities where checks are at the facility perimeter). Older travellers may face a number of obstacles at these points, such as standing while waiting in line for prolonged periods of time, the removal of personal items and items of clothing and putting them in tubs, moving and lifting baggage on and off the screening conveyor belt, and walking through passenger screening devices (Mein *et al.*, 2014). In the United States, the TSA trains specialized staff called Passenger Support Specialists to provide on-the-spot assistance during airport security screenings for travellers who require accommodation (TSA, n.d.). Training

for staff is provided by the Open Doors Organization, an organization focused on disability-related customer service training (ODO, n.d.). While CATSA has Family/Special Needs lanes in some airports (CATSA, n.d.-a), there is an opportunity to provide specialized staff training and accessible information geared to supporting older travellers, as well as always having devoted lines for these travellers, where individuals can wait in line while seated.

#### 4.3.5 Navigating the Terminal/Station

Walking long distances and changing levels are often necessary at terminals and stations, posing a significant obstacle for some older travellers. Currently in Canada, there is no federal oversight of terminal/station design, and therefore there is no consistency in the requirements across Canada. These obstacles could be addressed through design requirements. Planning standards recommend a maximum unassisted walk length of approximately 300 metres, but older travellers may tire after walking much shorter distances (Mein *et al.*, 2014). Walking fatigue may also increase the likelihood of tripping and falling (Mein *et al.*, 2014). While measures such as moving walkways have been implemented, they may present tripping and falling hazards for tired travellers, with injuries occurring more commonly in older adults (Nicolson, 2008). Some adaptations put in place in various public environments to assist in wayfinding may pose an additional hazard to older travellers. For example, tactile paving, installed as an indicator of hazards (Faruk *et al.*, 2008), or as a means of maintaining heading direction for people with impaired vision, also decreases gait stability (Pluijter *et al.*, 2015) and therefore is not an inclusive adaptation for public environments.

Motorized carts are a common method used to reduce walking, but availability can be haphazard (Mein *et al.*, 2014). There is an opportunity to develop motorized carts to form miniature transit systems within terminals/stations to overcome long distances (Mein *et al.*, 2014). It is important that these transit systems have a published schedule of route times or be available for booking, so that older travellers can incorporate this service into their journey during the planning stages. There is further opportunity to make transport infrastructure more inclusive and age-friendly by incorporating plentiful seating throughout terminals/stations, washrooms, and rest areas. To be helpful for older travellers, these should be comfortable, with large seats of appropriate height and with armrests to provide assistance in sitting and rising, especially during or following particularly tiring or stressful events such as security lines (WHO, 2007; Mein *et al.*, 2014). The City Bench NYC program (run by the New York City Department of Transit) is designed to increase the density and adequacy of public seating at bus stops and areas with high concentrations of older adults (NYC DOT, 2017). Importantly, the program ensures that bench



locations align with certain safety and engineering criteria, such as clearance and distance from surrounding infrastructure (NYC DOT, 2017). While there are no data available on the efficacy of the program, the project provisions and infrastructure have been developed within the context of age-friendly, inclusive design and have been recognized by the World Health Organization's (WHO) age-friendly cities initiative (AFNYC, 2013). In Canada, programs such as the Comox-Helmcken Greenway initiative are evaluating the importance of seating along walkways and corridors for older adults (Frank & Ngo, 2016).

Changes between levels in the terminal/station may also be necessary, and may require the use of an elevator or escalator. Elevators may be poorly located (e.g., at the end of hallways), poorly sighted, and thereby increasing the travel distance for those who want to access them. There is an opportunity to co-locate level changes together, such that escalators, stairs, and elevators are all on the same location in the terminal/station. There are also specific obstacles associated with the use of escalators. Older travellers have an increased risk of injury when using an escalator compared to other demographics (Nicolson, 2008), and escalators are not compatible with the use of mobility aids. The International Civil Aviation Organization (ICAO) planning manual recognizes this issue and states that elevators or ramps are preferred methods of changing levels (Mein *et al.*, 2014). Airport authorities are beginning to recognize this hazard and replacing existing escalators with high-capacity flow-through elevators. For example, London's Heathrow Airport Terminal 5 uses banks of large-capacity elevators, forming a vertical transit system (Mein *et al.*, 2014).

Travellers must be able to access information while moving through the terminal/station. There may be a large number of destinations within the terminal/station, including multiple gates, retail outlets, eating establishments, and washrooms. This can result in signage and information overload (Mein *et al.*, 2014), a potential obstacle to travellers seeking their gate (Kazeminia *et al.*, 2015). Lighting levels have also been lowered in many airports to conserve energy, which can make wayfinding even more challenging inside the terminal/station, as visual acuity generally declines with age. The Panel notes that ensuring adequate lighting can be complex as brightness needs to be balanced with issues like glare, for example. Further, the lighting needs of older adults in travel environments are different than those of other demographics (Fujiyama *et al.*, 2007). A variety of approaches that use visual or audio signs have been developed to improve communication for people with a diversity of needs. For example, high-contrast signs written in lower case (with appropriate upper case lettering), large, sans serif fonts, and matte surfaces enhance readability for all travellers (UNDP, 2010).

The ICT in common personal devices, such as mobile phones and tablets, can also be used to support wayfinding through a terminal/station. User-friendly technologies such as Bluetooth low-energy (BLE) beacons and GPS-based apps can support wayfinding (Box 4.2). Many of these types of apps would also be easier to use if a free, unlimited wireless connection were available in terminals/stations.

**Box 4.2****ICT in Personal Devices Can Help with Wayfinding**

BLE beacons in the environment (e.g., terminal/station) communicate with mobile phones using Bluetooth to deliver audio and visual information about environmental surroundings, such as landmarks, hazards, and information contained on standard visual wayfinding signs (Newman, 2014). Beacon-system technology would require investment and installation within the terminal/station, either by airport authorities or by bus or train station operators.

One example of a mobile GPS app features step-by-step wayfinding instructions, landmark information, real-time tracking, accessible audio-visual features, and customizable trip-taking options (AbleData, 2016; AbleLink, n.d.). This app has been shown to have promise for supporting travel for those with intellectual disabilities (Davies *et al.*, 2010) and is available for approximately \$465, as of April 2017 (AbleLink, n.d.).

A second GPS app has been recognized for excellence in accessible technology by the Canadian National Institute for the Blind (CNIB, 2015). It verbally describes what is around the user and helps them to plan trips in advance. The app is also beginning to incorporate the use of beacons to better navigate within infrastructures that have installed beacon positioning systems (CNIB, 2015). It is available for purchase for approximately \$53, as of April 2017 (iTunes, 2017b).

There are other technologies and apps that provide wayfinding in buildings. For example, near field communication (NFC) between two electronic devices can be used to make an NFC-based indoor navigation system, enabling users to navigate through a building by touching NFC tags (Ozdenizci *et al.*, 2015).

Technologies need not be linked to personal devices, however. For example, touch-responsive talking maps provide multisensory 3D maps for wayfinding through Braille and/or tactile interaction with the physical layout of an environment (Figure 4.2), and include touch responsive location-specific auditory information (IDeA, 2014). These wayfinding technologies underwent usability studies to ensure effectiveness (IDeA, 2014).



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**Figure 4.2**

**Multisensory Map**

A multisensory map developed by Touch Graphics, Inc. and the Center for Inclusive Design and Environmental Access (IDeA) at the University of Buffalo.

While navigating through the terminal/station, a lack of washrooms, or lack of accessible washrooms, may pose an obstacle for older travellers. The stalls may be too small for both traveller and luggage and create manoeuvring challenges. Many washrooms do not conform to inclusive design (Mein *et al.*, 2014), and therefore may not be accessible to all travellers. It is also important that washrooms be available at multiple, predictable points throughout the terminal/station, and be clearly designated.

#### 4.3.6 Waiting at the Gate and Boarding Transport Vehicles

Seating is limited at many boarding gates, which presents a greater obstacle to the older traveller, who is more likely to be fatigued at this point. Navigating between rows of seats may also be a challenge if there is inadequate spacing, especially if using a mobility aid, as baggage may impede the walkway (Mein *et al.*, 2014). Getting into or out of seating may be challenging if seats do not have armrests or are not the proper height (Ions, 2014; City of Ottawa, 2015). Prior to boarding, announcements at the gate are typically made over a speaker; this may present an obstacle to those who have hearing impairments (Mein *et al.*, 2014). Additionally, there may be overlapping announcements from adjacent gates, making hearing more difficult for all travellers. As mentioned above, information related to travel, such as boarding announcements, should have both audio and visual components for universal accessibility (Mein *et al.*, 2014; CCD, 2016). Improving the audibility of announcements involves the reduction of background noise and enforcement of speed and volume standards. Induction loop hearing systems, such as those retrofitted on BC Ferries (BC Ferries, 2016), use electromagnetic signals to enhance hearing (and reduce ambient noise) for individuals with hearing aids or implants, usually with no additional equipment required (HLAA, 2017). This system has also been installed in a transit station in Toronto, with positive feedback (CBC, 2011).

#### 4.4 BOARDING AND ON BOARD TRANSPORT VEHICLES

Boarding the transport vehicle, and sitting or moving about within the vehicle, may present challenges for older travellers. There is an opportunity to improve travel accessibility in Canada by strengthening level boarding requirements for modes of transportation under federal legislation. In the United States, airlines and airport operators are required to work together to ensure level boarding for passengers (with the exception of the smallest airports) (Ashby, 2015). This requirement does not exist in Canada. Many Canadian rail stations also lack level boarding (CTA, Expert testimony, 2016). This means that the height of the train is above the height of the boarding platform. There are station-based lifts at some staffed stations, and some rail cars have built-in lifts, but a large number of stations are not staffed and/or do not have lifts (CTA, Expert testimony, 2016). Even when a lift is available, the combined weight of a person and a large mobility aid may exceed the lift capacity (CTA, Expert testimony, 2016). Level boarding is a requirement under the *Americans with Disabilities Act* — all new rail cars in the United States must be accessible, and one car per train must be accessible, as of 1995 (Ashby, 2015).

In the case of bus travel, 48-hour advance notice is required to ensure accessible buses are available for intercity travel in Canada according to the Intercity Bus Code (Ashby, 2015). To further ensure boarding assistance, advance notice of 24 to 72 hours is required (Ashby, 2015). Travellers who rely on accessible services for bus travel therefore must make additional arrangements. Charlotte and François' scenario illustrates a bus trip enhanced by accessibility features.

Costs associated with retrofitting level boarding can be mitigated by direct and indirect benefits associated with increased accessibility (Karekla *et al.*, 2011). A cost-benefit analysis of the impacts of raising platform levels in London Underground stops, as well as increasing the doorway width of the trains, showed that the resultant reductions in boarding and alighting time lead to a reduction in operational costs, as well as faster journey times, which made such retrofits economically viable (Karekla *et al.*, 2011).

With an increase in seat density and load factors on aircraft (Sorensen, 2013; MIT, n.d.), there may be less room for travellers to get to their seat or take a break from sitting, or to accommodate those who require mobility aids. Infrastructure that enables those with mobility issues to manoeuvre throughout the restricted space, such as grab bars (CTA, 1998), provides greater accessibility on board vehicles. Also important is sufficient space to allow for the safe stowage of unoccupied mobility devices. The recommendations of the U.S. Department of Transportation Advisory Committee on Accessible Air Transportation (ACCESS Advisory Committee), discussed in Box 5.4, provide a good model for making airline lavatories more physically accessible, and for increasing the accessibility of in-flight entertainment systems (DOT, 2016a).

Inability to find necessary information about the vehicle once on board may also present obstacles. Locating the lavatories within the vehicle, or understanding where information can be found about the current and next stops, are necessary for comfortable, stress-free travel. Online, accessible maps of vehicle layout would inform travellers ahead of their journey where important facilities, such as lavatories, are located. Some standardization with respect to where this information is found (e.g., appropriately placed to the left of the entrance on a bus or train) would allow all travellers to reliably know what route they were on and what the next stop is (Worsfold & Chandler, 2010). As mentioned in Section 4.3.6, announcements on board vehicles should have both audio and visual components that can be clearly heard and seen.

## **CHARLOTTE AND FRANÇOIS (84 and 86 years old)**

### ***Quebec***

Charlotte hopes she can find information about the bus trip at the local seniors' centre. A staff member at the centre helps her navigate the bus company's website and book her and François' tickets. Charlotte is happy to learn that boarding support can be booked at the time of purchase at no extra charge. She is also able to link her daughter's cell phone to the tickets to keep Caroline apprised of delays and arrival time at the Val-d'Or bus station.



It is snowing quite heavily on the day of the trip when a community volunteer driver picks Charlotte and François up at their home and helps them with their bags. When they arrive at the bus stop (located at the local gas station), Charlotte and François gather their tickets at the counter. The cashier tells them the bus will be 15 to 30 minutes late because of the weather but that he will keep them updated about the bus's arrival. Charlotte and François sit in the indoor waiting area while the volunteer driver unloads their bags and checks them with the cashier, who stores them safely until the bus arrives. The bus is 25 minutes late, but the cashier informs Charlotte and François 5 minutes before it arrives, giving them a chance to get prepared. When the bus arrives, the driver exits the bus because she already knows the passengers boarding at this stop require special assistance. After loading their luggage, the driver activates the elevator lift system to help Charlotte and François onto the bus safely with their walker and cane, respectively. She helps them settle into their spacious reserved seats, which are directly behind her, and points out the easy-to-reach garbage disposals, pull-down food trays, the extra grab rail, as well as the lavatory light (which indicates whether the lavatory is in use or not). The driver also points out the visual announcement system, where the next stop will be displayed, and confirms she will also announce the name of each stop on the loudspeaker.

The bus moves slowly because of the snow and Charlotte is grateful she packed a lunch, given that the trip may take longer than 3.5 hours. François stands periodically using the grab rail bar to avoid stiffness, and thanks to the wide aisle, Charlotte can wheel her walker to the lavatory and support herself inside using grab rails. Near the end of their journey, which is now over an hour behind schedule, Charlotte and François are alerted by the audio announcement and electronic display, which indicate "Val-d'Or" is the next stop. Upon arrival, the driver helps them off the bus using the lift system while Caroline waves excitedly (she arrived at the station only 10 minutes before, having been informed of the delay).

## 4.5 TRAVELLING BETWEEN TRANSPORT VEHICLES

The various obstacles and example practices to minimize them, identified in Section 4.3, are also relevant for travel between transport vehicles (e.g., walking long distances, the location and accessibility of washrooms, the ability to wayfind to the next departure gate). Obtaining correct connection information may also be challenging for some travellers. Mobile technology can provide access to information and thereby reduce stress through the use of real-time mobile travel alerts, including real-time updates to changes to travel itineraries (e.g., vehicle delays, gate changes). Using accessible information signs and announcements in terminals/stations is one method to convey this information, and mobile alerts provide an additional option for personalized and on-demand access to pertinent travel information. An important component of ensuring the usability of innovative applications, such as travel alert applications, is the presence of publicly accessible wireless access in terminals/stations and transport vehicles. One example of this type of technology is the mobile application provided for passengers of East Japan Railway Company (Box 4.3).

### **Box 4.3**

#### **East Japan Railway Company's Train Operation Information Push Notification Mobile App**

East Japan Railway Company's mobile app provides updated information on train times and delays through automatic or "push" notifications. It also includes interactive station maps that show the user's location within the station, which differs from most wayfinding apps that focus on external, public wayfinding but may have little functionality in an indoor environment. On the busiest rail lines, beacons are installed to transmit data to users on the platform about the status of the car, such as congestion level and temperature. Users are also informed where a particular car will stop along the platform at each station, and the car's proximity to amenities such as transfer points, ticket counters, and escalators. Thus, the application keeps travellers informed of train information in real time and helps them make decisions according to their personal preferences and needs.

(Sakamoto, 2014)

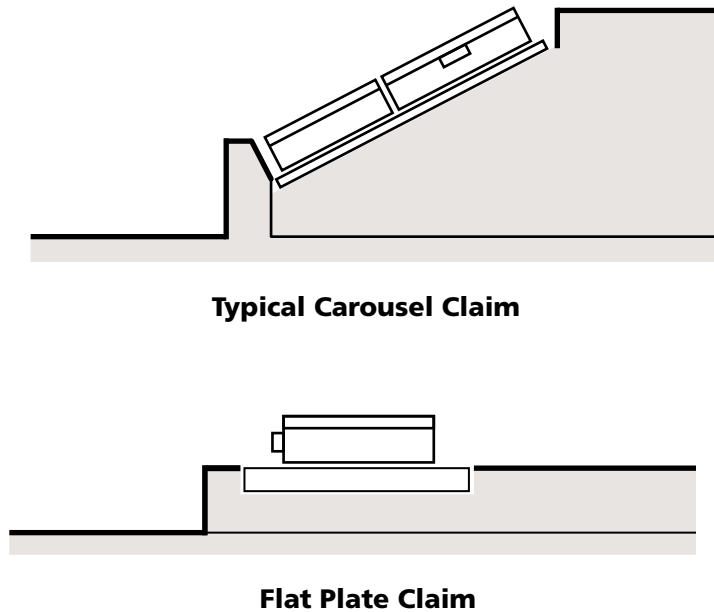
Changing modes of transport mid-journey may pose additional obstacles. The physical infrastructure supporting movement between modes of transportation is important for ensuring seamless door-through-door travel. If terminals/stations for different modes of transportation are not in the same location, the obstacles listed in Section 4.3 are repeatedly encountered throughout one's journey. There is an opportunity to develop physical transit hubs where travellers have easy access to multiple modes of transportation. Europe is a recognized leader in infrastructure development for intermodal connectivity (Oxford Economics, 2014); European airports are often part of transit hubs, which may include rail stations located directly beneath the air terminals. At the Amsterdam Airport Schiphol, for example, ground transport options (e.g., trains, taxis, buses, rental cars) are located in the Schiphol Plaza, which is connected to the airport's arrival halls by a short (three-minute) walk and wheelchair-accessible elevators (AMS, 2017a, 2017b). Canada's large size and jurisdictional division over transportation does pose a challenge to the creation of intermodal hubs, but there are good examples in Canada as well, such as the Vancouver SkyTrain, which serves Vancouver International Airport (TransLink, 2017a). An additional obstacle to changing modes through a journey is the need for multiple types of tickets. Unified tickets (as discussed in Section 4.1) could help minimize this obstacle as would ensuring tickets for different modes could be purchased at a terminal/station (e.g., getting bus tickets at the airport).

#### **4.6 POST-TRIP**

Once a transport vehicle arrives at its destination, a traveller's journey from the arrival gate to the baggage claim area presents issues similar to those encountered at the departure terminal/station, such as long walks, wayfinding difficulties, and hazards posed by moving walkways and escalators (Mein *et al.*, 2014) (Section 4.3). Furthermore, after deplaning, the amenity most frequently used is the washroom, where stalls can be too small for both traveller and luggage and create manoeuvring challenges. These washroom-related obstacles are relevant to all modes of transport, and at multiple stages of the journey.

Waiting at the baggage carousel can require travellers to stand for long periods of time, which can be difficult for those who are fatigued from their journey or who have physical conditions that make standing challenging (e.g., knee or lower back problems). Retrieving baggage from the carousel can be physically strenuous, especially if the baggage carousel is not flat (Mein *et al.*, 2014). Some new and renovated airports are installing flat plate claim devices that do not require bags to be lifted over a sill (Mein *et al.*, 2014) (Figure 4.3).





Adapted with permission from Mein *et al.*, 2014

**Figure 4.3**

**Slope Plate (Typical) and Flat Plate Baggage Claim Devices**

Bags can be removed more easily from flat plate baggage claim devices, making them more user-friendly than typical baggage carousels (sloped).

Retrieving baggage when travelling by rail and bus may also result in obstacles. There may not be enough staff to help train travellers remove bags from overhead compartments or get luggage onto the platform, which may involve stairs. Similarly, passengers travelling by bus may need the driver's assistance to lift their stowed baggage from under the bus onto the platform. Train and bus companies could offer baggage service by staff, making their routes more inclusive and increasing their potential customer base.

Arrival halls for all modes of transport may not provide adequate indoor seating for travellers waiting for car, taxi, bus, or shuttle pickups (Mein *et al.*, 2014). Waiting outside while standing in inclement weather is not uncommon in Canada. There may also be numerous shuttle services on offer, making it difficult to find the correct curb or pickup stop (Mein *et al.*, 2014). This final transition is challenging because travellers have their checked baggage with them and may be fatigued from their journey. Designing spacious arrival halls using inclusive design principles, with plentiful seating and clear signage, could aid during

this portion of the journey. Wayfinding apps and trip planners can also assist by providing personalized instructions for completion of the journey (e.g., Box 4.2), whether by private automobile, taxi, municipal transit, ridesharing program, volunteer service, or other mode.

#### 4.7 KNOWLEDGE GAPS AND CONCLUSIONS

Canadian data exist on both accessibility and obstacles related to travel for individuals with disabilities, but there is no tracking of complaints or issues frequently encountered by older travellers using the Canadian transportation system. What research the Panel could find focuses on older travellers who use air travel (e.g., Mein *et al.*, 2014). While flying can be the most expensive mode of transport, high fares for any mode of transportation makes travel out of reach for many on fixed incomes. The lack of data related to modes of transportation other than air presented a challenge for the Panel, which was charged with studying all federally mandated modes. Nevertheless, many general practices presented in Chapter 4 can be applied across all transportation modes to improve accessibility and the travel experience.

Innovative transportation adaptations and technologies are often not published in peer-reviewed journals or grey literature. This is not surprising, as many such innovations are driven by industry, which may wish to protect trade secrets or disseminate information through other means (e.g., industry conferences, advertisements). This made it difficult to identify innovative practices and products, their development history, and effectiveness. Even where the Panel found such information, it was difficult to find measures of evaluation such as general customer satisfaction, improvement in the traveller experience, or uptake in services. There was also a lack of data about whether or not proposed technologies or programs have positive effects once implemented. R&D groups such as the Transit Cooperative Research Program (TCRP) and the Airport Cooperative Research Program (ACRP) — both under the governance of the U.S. Transportation Research Board (TRB) — sponsor research projects related to innovative transportation technologies (TRB, 2017a, 2017d), as do associations such as the Canadian Urban Transit Association (CUTA, n.d.) and the American Public Transportation Association (APTA, 2017), among others. This type of R&D will be discussed further in Chapter 5.

Passengers on intercity buses tend to be older travellers and students with no other mode of transportation and possible financial constraints (Council of Deputy Ministers, 2010). Additional research into obstacles met during intercity bus travel is warranted given the scarcity of data. The lack of research into the unmet transportation needs of older adults in rural or remote communities has been highlighted in a report on transportation in rural communities in

Manitoba produced by the Seniors Transportation Working Group (Sylvestre *et al.*, 2006). Indigenous Peoples living in more remote communities face distinctive transportation challenges, and little data exist as to how these challenges impact older adults in these communities. Finally, there are also minimal data relating to ferry travel with respect to older adults.

Over the course of a journey, older travellers may encounter obstacles linked to ageism, travel preferences, physical, sensory, and cognitive abilities, geographical location, and income. Table 4.1 summarizes obstacles, and opportunities to minimize them, encountered over the course of a door-through-door journey by older travellers. Feeling safe and secure while travelling is essential for continued use of the transportation system. These obstacles will likely play a fundamental role in people's selection or avoidance of various journeys. Therefore, adopting the examples and practices presented in this chapter represents an opportunity for all stakeholders to make travel more inclusive for all. Industry solutions also represent an economic opportunity to increase the number of individuals travelling. Improving federal transportation services across Canada could have the added benefit of opening up new, accessible tourism destinations. With better accessibility, these destinations can develop with an emphasis on services and tours that appeal to older adults, providing an economic opportunity for the tourism industry and for currently inaccessible (e.g., rural or remote) communities.

While some obstacles discussed in this chapter are specific to mode of transport and disability or preference (e.g., larger mobility aids not fitting through the aircraft door), others are much more wide-ranging (e.g., obstacles associated with using online websites and apps to book travel). Not all obstacles discussed in this chapter directly relate to the federal transportation system, but they nevertheless impact some older travellers' ability to use this system. While older adults are a diverse group, and obstacles can be quite personalized, solutions to address these issues can be broad in scope, such as inclusive design in the building of new infrastructure — discussed further in Chapter 5.

Table 4.1

**Door-Through-Door Journey Obstacles and Opportunities to Minimize Them**

Trip Stage	Obstacle	Opportunities to Minimize Obstacle	Stakeholder(s) Responsible for Implementation
Planning the Journey	Trip planning	<ul style="list-style-type: none"> <li>Targeted trips and services for older travellers</li> <li>Accessible information hubs</li> <li>Human-oriented information delivery for travellers wishing to interact and plan via phone or in person</li> <li>Joint or unified ticketing</li> </ul>	<ul style="list-style-type: none"> <li>Transportation service providers</li> <li>Tourism industry</li> <li>Consumers</li> </ul>
	Lifting baggage	<ul style="list-style-type: none"> <li>Baggage transport services, allowing baggage to be checked door-through-door</li> </ul>	<ul style="list-style-type: none"> <li>Transportation operators and service providers</li> </ul>
	Lack of travel companions	<ul style="list-style-type: none"> <li>Group tours for older travellers</li> </ul>	<ul style="list-style-type: none"> <li>Tourism industry</li> <li>Consumers</li> </ul>
Travelling from Home to Terminal/ Station	Following roadway signage	<ul style="list-style-type: none"> <li>Signage inventory to remove redundant signs</li> <li>Signs that are clear, concise, and similar to those used within surrounding municipality</li> </ul>	<ul style="list-style-type: none"> <li>Transportation operators (e.g., airport authorities)</li> </ul>
	Parking at terminal/ station	<ul style="list-style-type: none"> <li>Wheelchair delivery service in parking garage or lot</li> <li>Apps for locating parking spaces</li> <li>Ramps at level changes on pedestrian routes</li> <li>Clear and consistent signage leading to terminal/station</li> </ul>	<ul style="list-style-type: none"> <li>Transportation industry</li> <li>Transportation operators</li> </ul>
	Lack of municipal transit	<ul style="list-style-type: none"> <li>Municipal transit routes to terminals/ stations</li> <li>Vehicle modifications, assistive technologies, and autonomous vehicles that allow for prolonged use of personal vehicles</li> <li>Ridesharing services</li> <li>Volunteer driver services</li> </ul>	<ul style="list-style-type: none"> <li>Municipality</li> <li>Transportation Industry</li> <li>Community</li> </ul>
	Handling heavy baggage	<ul style="list-style-type: none"> <li>Baggage transport services</li> <li>Baggage carts in parking garage or lot</li> </ul>	<ul style="list-style-type: none"> <li>Transportation service providers</li> <li>Transportation operators</li> </ul>

*continued on next page*

Trip Stage	Obstacle	Opportunities to Minimize Obstacle	Stakeholder(s) Responsible for Implementation
Getting from Terminal/ Station to Transport Vehicle	Wayfinding in terminal	<ul style="list-style-type: none"> <li>• Human assistance; trained staff or volunteers</li> <li>• Assistive technology: smartphone apps using GPS and/or beacons, touch-responsive talking maps</li> <li>• Reducing signage clutter</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation service providers</li> <li>• Volunteers</li> <li>• Transportation operators</li> <li>• Consumers</li> </ul>
	Using technology	<ul style="list-style-type: none"> <li>• Staff present to assist if traveller prefers human interaction during check-in process</li> <li>• Self-service kiosks that are both video and audio enabled</li> <li>• Trained volunteers to assist with kiosk check-in</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation service providers</li> <li>• Community</li> <li>• Volunteers</li> </ul>
	Standing, lining up, changing levels, and walking (causing fatigue)	<ul style="list-style-type: none"> <li>• Plentiful seating</li> <li>• Rest areas where appropriate (e.g., after security checkpoint)</li> <li>• Elevators, not escalators or moving sidewalks</li> <li>• Motorized carts for a transit system for travelling long distances</li> <li>• Technology to design shorter routes (with fewer level changes) through terminal/station</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation operators</li> </ul>
	Security checkpoint	<ul style="list-style-type: none"> <li>• Dedicated line(s) for older travellers</li> <li>• Options for assistance during process</li> <li>• Quiet, separate seating areas after checkpoint</li> </ul>	<ul style="list-style-type: none"> <li>• Canadian Border Services / CATSA</li> </ul>
	Pre-boarding	<ul style="list-style-type: none"> <li>• Spacious seating areas prior to boarding with large aisles and suitable chairs</li> <li>• Audio and visual non-overlapping boarding announcements</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation operators</li> <li>• Transportation service providers</li> </ul>

*continued on next page*

Trip Stage	Obstacle	Opportunities to Minimize Obstacle	Stakeholder(s) Responsible for Implementation
Boarding and On-Board Transport Vehicles	Boarding	<ul style="list-style-type: none"> <li>Level boarding for federally regulated modes of transport</li> </ul>	<ul style="list-style-type: none"> <li>Government</li> </ul>
	Seating	<ul style="list-style-type: none"> <li>Inclusively designed seating for individuals with a range of mobility needs in all transport vehicles</li> </ul>	<ul style="list-style-type: none"> <li>Transportation service providers</li> </ul>
	Mobility aids	<ul style="list-style-type: none"> <li>Travel-oriented mobility aids available for use within vehicles</li> <li>Safe stowage of unoccupied mobility devices on board the vehicle</li> </ul>	<ul style="list-style-type: none"> <li>Transportation industry</li> <li>Transportation service providers</li> </ul>
	Ability to access information	<ul style="list-style-type: none"> <li>Consistent presentation of important information (e.g., next stop) using both audio and visual cues</li> </ul>	<ul style="list-style-type: none"> <li>Transportation service providers</li> </ul>
	Lavatories	<ul style="list-style-type: none"> <li>Inclusive, accessible lavatories based on ACCESS guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Government</li> <li>Transportation service providers</li> </ul>
Travelling Between Transport Vehicles*	Connecting to next trip	<ul style="list-style-type: none"> <li>Mobile technology with real-time travel alerts</li> <li>Better wayfinding information (e.g., through apps, use of maps, and other forms of communication within hub)</li> <li>Transportation hubs where infrastructure houses terminals and stations for multiple modes of transport in a single location</li> </ul>	<ul style="list-style-type: none"> <li>Government</li> <li>Transportation operators</li> <li>Transportation service providers</li> </ul>
Post-Trip**	Getting baggage	<ul style="list-style-type: none"> <li>Ample seating in baggage claim area</li> <li>Flat plate baggage carousels</li> <li>Baggage assistance if required</li> </ul>	<ul style="list-style-type: none"> <li>Transportation operators</li> <li>Transportation service providers</li> </ul>
	Getting transport from terminal/station to destination	<ul style="list-style-type: none"> <li>Baggage service to deliver luggage to destination</li> <li>Indoor arrivals waiting areas</li> <li>Transit options to reach destination (with information provided in an accessible format): municipal transit, ridesharing or volunteer driver services, personal vehicle modifications</li> </ul>	<ul style="list-style-type: none"> <li>Transportation service providers</li> <li>Transportation operators</li> <li>Municipality</li> </ul>

\* Obstacles and opportunities to minimize them in the “Getting from Terminal/Station to Transport Vehicle” column are also relevant to the “Between Transport Vehicles” portion of the journey, but for brevity are not presented again.

\*\* Some obstacles and opportunities that minimize them in the “Getting from Home to Terminal/Station” column are also relevant to the “Post-Trip” portion of the journey, but for brevity are not presented again.

# 5

## **Moving Forward**

- **Transportation R&D and Innovation**
- **Advancing Human and Social Resources**
- **Advancing Technology and Infrastructure**
- **Advancing Policy**
- **Knowledge Gaps and Conclusions**

## 5 Moving Forward

### Key Findings

- There are three key pathways that would support the development of an inclusive transportation system in Canada: advancing human and social resources, advancing technology and infrastructure, and advancing policy.
- A multidisciplinary and intersectoral approach to research, development, and innovation serves as the foundation for all three pathways. This approach would involve all orders of government, industry, and other stakeholders, including older adults.
- The autonomy and independence of older travellers could be supported through targeted, sector-wide training on age-friendly customer service, as well as consumer education that ensures older adults and their travel companions are aware of existing supports and services.
- Ongoing impact assessment that engages relevant stakeholders, including older adults, would support the development, evaluation, and continuous evolution of an inclusive transportation system.
- There are mechanisms available to the federal government that could encourage the development of an age-friendly transportation system that meets the needs of older adults, including:
  - Tying its infrastructure and other investments to projects that support inclusive, multimodal transportation.
  - Moving from federal *codes of practice* for accessibility to *regulations*, which may support a more inclusive transportation system.
  - Formally monitoring the impact of actions meant to increase the accessibility of the transportation system, and issuing public reports on the results of this monitoring at regular intervals.
  - Continuing the process of developing comprehensive accessibility legislation.

The benefits of an inclusive transportation system that enables seamless door-through-door travel for everybody, including older adults, are numerous. But achieving such a system is not a simple endeavour. In Chapter 4, the Panel outlined obstacles that older travellers face over the course of a door-through-door journey, and opportunities to minimize those obstacles. An inclusive transportation system will not come about through piecemeal introduction of these opportunities, however, but requires a holistic approach to adaptation — one that must continue to evolve, since the needs and preferences of older travellers will shift over time as new cohorts of people reach retirement age.



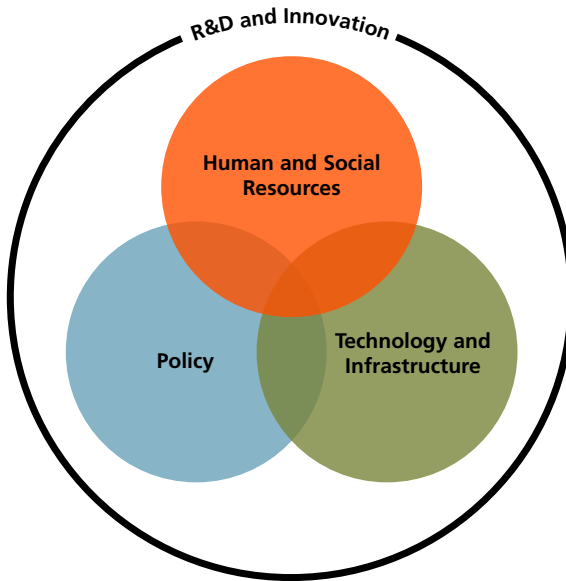
In this chapter, the Panel explores mechanisms to improve inclusivity and integration in the Canadian transportation system, so that door-through-door travel is possible for older adults. Together, these activities support the following goals: implementing opportunities to address the travel obstacles currently facing older adults in the Canadian transportation system; the development of new (and improvement of existing) opportunities; and the development of a culture of continual improvement and adaptation to meet the needs of all travellers. Based on a review of knowledge and practices in transportation and other sectors, the Panel identified three pathways to help achieve these goals:

- Advancing human and social resources
- Advancing technology and infrastructure
- Advancing policy

Intersectoral and interdisciplinary research and development, and innovation (together called R&D and innovation), are important components of each of the identified pathways. The relationship between the three pathways and R&D and innovation is illustrated in Figure 5.1. In this chapter, the Panel first outlines actions for supporting transportation R&D and innovation in Canada, followed by a discussion of the key pathways, focusing on how stakeholders could support the development of a transportation system that minimizes obstacles for older travellers.

## **5.1 TRANSPORTATION R&D AND INNOVATION**

R&D and innovation includes more than the development of new technologies and other innovations; it also supports the testing and implementation of research-driven solutions in real-world settings, as well as the evaluation of solutions as they relate to the heterogeneity of older adults, and more broadly all potential users of the transportation system. Evaluation is essential as it is the only way to determine whether new ideas are successful in practice and to measure any unintended consequences (e.g., moving sidewalks that create a new challenge for older travellers as they are difficult to enter and exit). Policy-specific R&D and innovation can also provide evidence to support effective policy development and uptake in the Canadian context. Ongoing R&D and innovation is important to ensure the transportation system is adaptable and able to evolve to meet the needs and preferences of future generations of older travellers.



*Figure 5.1*

### **Three Pathways to Achieve an Inclusive Transportation System, Supported by R&D and Innovation**

R&D and innovation, including user-centred approaches, supports the three key pathways to achieve an inclusive transportation system: advancing human and social resources, advancing technology and infrastructure, and advancing policy. Each of the pathways can also inform and direct R&D and innovation as well as the other two pathways.

#### **5.1.1 Advancing the Canadian Transportation Research Ecosystem**

Transport R&D and innovation is being undertaken in Canada by different research groups in the transportation industry, government, universities, and colleges. Examples from the academic realm include:

- the University of Manitoba's Transport Institute, which produces transportation and logistics research in support of public and private sector partnerships promoting knowledge transfer to professional communities (University of Manitoba, 2016);
- the University of Toronto and University of Regina's collaborative Online Network-Enabled Intelligent Transportation Systems (ONE-ITS) initiative, which supports software and ICT development and maintains an open network platform for collaborative R&D (ONE-ITS, n.d.); and

- the Van Horne Institute, affiliated with the University of Calgary, University of Alberta, SAIT Polytechnic, and Athabasca University, which focuses on market insights and opportunities, as well as business intelligence capacity in transportation and trade policy, regulations, innovation, and operations (Van Horne Institute, 2017).

The federal government recognized the importance of R&D and innovation and intersectoral collaboration in Budget 2017. The budget outlined several innovation initiatives, including the establishment of collaborative and intersectoral R&D superclusters that work towards targeted commercial outcomes; and plans for an open-data initiative (the Canadian Centre on Transportation Data) that will provide intersectoral access to transportation data (GC, 2017c). To best inform policy, open data initiatives should include data relating to older adults themselves, capturing the full heterogeneity of this demographic (i.e., both “small data” generated by individual users (small data lab, 2017) and “thick data” that is the result of qualitative, ethnographic research methods (Wang, 2013)). Developing robust open data may incentivize applications. For example, Transport for London uses this approach with open source development (TfL, n.d.-a).

The federal government can support R&D and innovation by funding extramural research programs and conducting research in government institutes. The Transportation Development Centre (TDC) is an example of the latter. The TDC was established by TC to take a multidisciplinary approach to supporting transportation research focused on safety, security, efficiency, and accessibility to promote technological innovation from concept development and research to product application, as well as policy, planning, and regulatory efforts (TC, 2015). The TDC or a similar entity could help enhance Canada’s R&D and innovation capacity for transportation efforts and modernization — a goal stated in Budget 2017 (GC, 2017c) — by playing a facilitator role and providing research funds. Such a centre or body could provide oversight for intersectoral collaborations and direct future investments towards industries or researchers seeking to address the obstacles facing older travellers in the Canadian transportation system. Canada can look to international transportation bodies to inform the development of stronger intersectoral integration (Box 5.1).

The Panel stresses that the development of a Canadian transportation system that minimizes obstacles for older travellers is not a simple endeavour and cannot be achieved in a fragmented way. One mechanism that may support moving forward, with an ongoing holistic approach to adapting the transportation system, is a multi-stakeholder oversight body that includes representation from all orders of government, transportation service providers and operators, as

well as users, including older travellers. Such a body could help coordinate the actions of all stakeholders, help ensure progress is being made, and identify key knowledge gaps that are hindering the development of effective solutions. There are many relevant not-for-profit organizations (including those that represent older adults) whose knowledge could be leveraged using such a multi-stakeholder body.

### **Box 5.1**

#### **Transportation R&D and Innovation Bodies Worldwide**

The TRB of the U.S. National Academies of Sciences, Engineering and Medicine acts as a national oversight body, research centre, and information database for transportation solution development, recommendations, and monitoring (TRB, 2017c). The TRB sponsors a number of cooperative research programs, including the U.S. TCRP focused on R&D and innovation in public transportation (TCRP, 2017; TRB, 2017d). The TCRP has established strategic priorities that include integrating new technology into the transportation system, and research on meeting the needs of the transportation consumer (TRB, 2017d). The TRB also sponsors the ACRP, which provides competitive funding for industry-facing R&D projects aimed at a variety of airport-specific solutions (e.g., environmental design, policy, planning, and human resources) (TRB, 2017a, 2017b). ACRP funding programs include graduate research awards and university design competitions (TRB, 2017a).

Similar bodies exist in Europe. For example, the Swedish National Road and Transport Research Institute (VTI) focuses on interdisciplinary research across all modes of transportation (VTI, n.d.-b). The VTI also hosts a transportation library, runs the Swedish Transport Research Portal, and contributes to international collaborative research database development efforts (VTI, n.d.-a).

### **5.1.2 User-Centred Approaches**

R&D and innovation that considers the human experience can support the design of technologies, infrastructure, and training and education services that are effective at minimizing obstacles currently facing older travellers. There are two types of user-centred approaches:

- *User-centred R&D and innovation* is a multidisciplinary approach that is responsive to user-identified needs (Iwarsson & Stahl, 2003; Von Eye & Wiedermann, 2015; Usability.gov, n.d.-a). Social science research can provide an understanding of the wants and needs of older travellers, and identify the types of solutions that are acceptable for meeting those wants and needs.

- *User-centred methodologies* include needs assessments for identifying priority opportunities that should be targeted by R&D and innovation; collaboration in opportunity development; measuring the acceptability of existing opportunities and those under development; and the integration of user feedback for improvements (Kinzie *et al.*, 2002; Gulliksen *et al.*, 2003; Lofthouse & Lilley, 2006).

When applied to the design process this type of approach is called a user-centred (or human-centred) design process (W3C, 2004). Given the importance of technology and customer service in the modern transportation system, this approach should include a focus on human-digital and human-environment interactions. For example, the development of a smartphone app that provides up-to-date detailed information on flight delays should consider the preferences of users or it will not be used. Further, an alternative customer service option will likely still be needed if some in the target user audience do not have access to a smartphone or prefer to receive information through human interaction. In short, integrating user needs and input early on in development can reduce the number of solutions that fail in practice because they are not accepted by users (Usability.gov, n.d.-b). The Centre for Ageing Better (CAB) adopts a user-centred R&D and innovation approach to tackle issues related to aging in the United Kingdom. The CAB commissions others to examine evidence and evaluate practices related to issues facing older adults (including transportation), and then communicates what that evidence says about the best ways of implementing change. The CAB focuses on working in partnership with other funders of innovation and change, and participates in intersectoral collaborations, with the goals of advocating for older adults and improving their quality of life (CAB, n.d.-a). The CAB takes a user-centred approach by incorporating lived experience and user input as a major form of evidence (CAB, n.d.-c). Users with lived experience play an active role in the design (and improvement) of solutions intended to better their quality of life (CAB, n.d.-d). The CAB also places emphasis on knowledge and evidence sharing, as well as open collaboration, aiming to transform research outputs into policy action (CAB, n.d.-a, n.d.-b).

## 5.2 ADVANCING HUMAN AND SOCIAL RESOURCES

Human interactions are an important part of the transportation experience for travellers. Here the Panel discusses how the training of transportation service providers and operators, and education of consumers, can help minimize many of the obstacles faced by older travellers accessing the Canadian transportation system.

### 5.2.1 Training That Supports Older Travellers and Their Families

Good customer service that meets the needs of travellers supports autonomy and independence. Targeted, standardized, and mandatory sector-wide accessibility training, combined with ongoing monitoring of the efficacy and impact of training for users, has been identified as a means to support inclusive service and assistance for older travellers (Ashby, 2015; Frye, 2015a; DOT, 2016a; CTA, 2017b). Good education and training for service providers and operators using positive contact experiences with older adults can counter ageist attitudes and help ensure that service and support for older travellers is effective and age-appropriate (Levy, 2016). Training to support older travellers could focus on age-specific needs, particularly around attitudes and behaviours towards older adults, in order to avoid ageist practices. This training could include specific skills development, such as appropriate communication and ensuring safe transfers between transportation modes.

The federal government already plays an important role in mandating and providing training for personnel in the federally regulated transportation system. As discussed in Chapter 2, the CTA administers regulations for the training of personnel employed in transportation-related facilities, or by carriers who transport greater than 10,000 passengers per year, in order to better assist people with disabilities (CTA, 2017b). The Personnel Training for the Assistance of Persons with Disabilities Regulations and the CTA's codes of practice outline the required assistance standards. The regulations dictate this training must be done within the first 60 days of employment (CTA, 2017b). To assist service providers with training, the CTA has compiled the training program, *Accessibility for All*, a series of comprehensive modules that are collected in 45 minutes of videos (CTA, 2016a). The CTA also performs routine compliance monitoring (inspections and investigations) of facilities and carriers to ensure that accessibility service regulations, including the provision of training, are met, and to enforce regulations in cases of violation (CTA, 2015a).

The 2014–2017 CTA Strategic Plan intends to increase assessment of personnel training regulations and develop improved compliance tools for training regulations (CTA, 2014b). There is a lack of documentation on the efficacy of current training practices in meeting the needs of older travellers. Today's training regulations focus on accessibility provisions, but the Panel notes that, to benefit older travellers generally, the regulations need to ensure a focus on customer service skills free of ageism. Training that educates staff about both the positive features of aging, and the difference between aging and disability, would also be beneficial. Notably, appropriate education around age-related attitudes has been shown to positively affect knowledge, perceptions, and

attitudes, and to reduce ageism (Levy, 2016). The Panel notes that, to further benefit older adults, training should stress the heterogeneity of needs and preferences of this demographic, and the importance of self-determination.

Specialized training programs may be used to provide better service related to one particular obstacle or stage of the journey, such as going through security, a particularly stressful and difficult part of travelling. As described in Chapter 4, the TSA in the United States provides specialized training for staff who perform security screenings to assist travellers who need accommodation (TSA, n.d.). Part of this training is provided by the Open Doors Organization (ODO), a disability-related customer service training organization; the ODO uses interactions with persons with disabilities during training to break down obstacles and facilitate learning (ODO, n.d.). Over 3,000 trained workers are deployed in U.S. airports by the TSA (ODO, n.d.). Additionally, ODO has provided training to over 8,000 frontline staff employed by Amtrak, a U.S. passenger railroad service (ODO, n.d.). These programs may serve as models for specialized programs to address specific obstacles within Canada's federal transportation system.

While the federal government has a role to play in setting requirements related to staff training and providing supports around education guidelines, ultimately such training is the responsibility of the transportation service providers and operators themselves. Companies have an interest in training staff to understand and address the needs of all travellers, including older adults, as this could make their services more appealing to a broader range of customers and generate good will among the general public. Understanding what customers (e.g., older travellers) want and what is acceptable to them is important for ensuring that any training provided is appropriate and that the resulting changes in customer service will benefit consumers.

Along with transportation sector employees, volunteers can help give older adults a positive travel experience. And like employees, volunteers (such as the YVR Green Coats discussed in Section 4.3.1) can benefit from meaningful training programs. Because the decision to engage in volunteer work is influenced by a desire to stay active and to help others, the transportation sector can capitalize on individuals' motivation to improve the outcomes of assistance and service programs in the first place (WHO, 2015). Volunteer motivation research demonstrates the importance of structured training and management, as well as knowledge of the cause, as critical factors in attracting and retaining volunteers (Wilson, 2012; WHO, 2015).

Encouraging older adults to participate in transport-related volunteer programs themselves, when appropriate, can also have reciprocal benefits. Older adults can bring unique value through lived experience, especially because the willingness of older adults to volunteer has been shown to be influenced by investment in the cause (Lasby, 2004). Furthermore, participation in volunteer activities contributes to healthy aging and quality of life, and helps support social mobility and activity, particularly when older adults feel appreciated and autonomous (Cattan *et al.*, 2011; Wilson, 2012; WHO, 2015).

### **5.2.2 Travel Service Education for Users**

Initiatives that educate users on available travel services may improve travel experiences in addition to supporting the autonomy and independence of older travellers. For instance, service providers can ensure that users are made aware of available travel supports and services (e.g., related to health, accessibility), and how to access them. This may be particularly helpful in the trip planning stage because it gives travellers more confidence to undertake a journey. Examples of education services include airline programs or websites that offer individual health assessments to help potential passengers plan their journeys (Section 4.1.1).

## **5.3 ADVANCING TECHNOLOGY AND INFRASTRUCTURE**

Transportation infrastructure is responsible for many of the obstacles outlined in Chapter 4. Here the Panel discusses how the design of infrastructure could benefit from the integration of inclusive design principles, and how technology is opening the door to new opportunities in transportation infrastructure.

### **5.3.1 Development of Inclusive Infrastructure**

Age-friendly environments can be created using the principles of inclusive design, which “considers the full range of human diversity with respect to ability, language, culture, gender, age and other forms of human difference” (IDRC, n.d.). The goal of inclusive design is to ensure that the built environment (e.g., individual buildings, travel vehicles) is accessible from the outset and to create “better experiences for everyone” (IDRC, n.d.) (Box 5.2). Taking these approaches from the start prevents the need to make modifications later or create separate systems for people with different sets of needs. However, these principles can also involve modifications to existing infrastructure. Importantly, the Panel notes that flexibility within the transportation system is needed to accommodate a diversity of needs and preferences. In some cases, one size will not fit all.



Inclusive design has been used to develop the infrastructure of many different types of age-friendly environments, including housing (CCDS, 2014), hospitals (Huang *et al.*, 2011), and public spaces (WHO, 2007; Newton *et al.*, 2010) (Box 5.2). Examples of inclusive design strategies for transportation infrastructure include ensuring that terminal/station seating, washrooms, and interfaces (e.g., signage, websites, ticket kiosks) are usable by all (Mein *et al.*, 2014). Inclusive design supports a big-picture approach, focusing on the accessibility of infrastructure as a whole as opposed to a piecemeal approach that examines the components of transportation infrastructure or information technology independently. One example of partial success is Toronto's Union Pearson Express, where the train itself is physically accessible for all customers (Metrolinx, 2015). However, the location of the train in Union Station in Toronto is not supportive of multimodal transportation because of level changes and a lack of clear signage. R&D and innovation into different dimensions of the built environment (e.g., distance travelled, signage) is important for ensuring that inclusive designs take a holistic approach and consider all relevant dimensions of a door-through-door transportation journey.

### **Box 5.2**

#### **Examples of Inclusive Design in Canadian Infrastructure**

The Canadian Museum for Human Rights in Winnipeg took an inclusive design approach throughout the planning and building process. This included getting nationwide input from people with disabilities and incorporating multisensory technology and design expertise (CMHR, 2013). The design was recognized with the 2016 Gold Award from the International Association of Universal Design (CMHR, 2016). Inclusivity is an ongoing consideration, with the Inclusive Design Research Centre at OCAD University collaborating with museum staff to continually develop interface and input devices for touchscreen and kiosk-based exhibits as new technology is established (CMHR, 2013).

The Winnipeg Richardson International Airport has also been recognized for its inclusive design features (WRIA, 2015), including the accessibility of physical features such as large washroom stalls, widened entryways, and illuminated handrails, treads, and walking surfaces, as well as staff and volunteer awareness and the requirement of best practice techniques for all restaurant and retail tenants (WRIA, 2010; AACWinnipeg, 2016).

Both of these examples are located in Winnipeg, where, since 2001, there has been an inclusive design policy in place that requires a specific review process, including an audit checklist of all new and major retrofits to indoor and outdoor environments (City of Winnipeg, 2017; AEBC, n.d.).

### Learning from Other Sectors

The obstacles faced by older travellers can be similar to challenges faced by older adults in other aspects of day-to-day life. An increase in age-friendly and inclusive approaches across a range of sectors represents a move towards a global culture that is responding to the aging demographic and promoting healthy aging for all (WHO, 2007, 2015, 2016). For example, the WHO's Global Network for Age-Friendly Cities and Communities and the Age-Friendly Cities Framework represent a global movement in promoting age-friendly culture, with an emphasis on sharing practices among cities and communities (WHO, 2017b). Age-friendly approaches have also been applied frequently within the health sector (Box 5.3). The development of age-friendly communities more generally, as well as age-friendly transportation specifically, has been shown to have positive effects on older adults, including benefits to physical and mental capabilities; support of autonomy; enhanced enjoyment and quality of life; and reduction of ageism, isolation, and loneliness (Cvitkovich & Wister, 2001; AGE, 2002; WHO, 2007, 2014, 2017a; Kim & Ulfarsson, 2013).

AGE Platform Europe, a not-for-profit organization that seeks to promote the interests of older adults in the European Union, has identified key elements essential in the implementation of age-friendly environments and practices. These elements include:

- “the active participation and engagement of older people in informing and validating improvement programmes;
- strong inter-generational ties to build cohesion and design-out cross-generational conflict in highly negotiated shared space usage;
- improved information and communications infrastructure to maintain proactive engagement;
- cross-agency and cross-sectoral stakeholder collaboration mechanisms to manage integrated projects delivery, built on platforms of strong leadership;
- evidence-based technical patterns and guidelines (applicable at a range of hierarchical levels — global, European, national and local) that can prompt dialogues and help forge consensus;
- business/private sector engagement — that can foster innovation, increase, reach and forge economic sustainability.”

(AGE, 2010)

The Panel notes that these elements highlight the active involvement from cross-sectoral stakeholders, including older adults themselves. In the case of transportation infrastructure in the Canadian context, a multi-stakeholder approach would need to involve the governmental agencies in charge of transportation (federal, provincial, territorial, and municipal), the companies that constitute the transportation industry, as well as older adults — both those who travel frequently and those who do not.

**Box 5.3****Examples of Age-Friendly Practices in the Healthcare Sector**

An age-friendly approach to healthcare aims to support the independence and quality of life of older adults through proactive, holistic, and patient-centred universally accessible care, while simultaneously reducing the economic costs incurred by hospitals (AHMAC, 2004; Carstairs & Keon, 2009; Huang *et al.*, 2011; AGE, 2012; WHO, 2015). Consistent with the principles of inclusive design and accessibility, age-friendly hospitals require effective solutions in both physical infrastructure and service-related activities (Huang *et al.*, 2011; WHO, 2015).

A number of age-friendly services provided by healthcare workers have been developed. For example:

- training programs to ensure staff are able to provide appropriate and accessible service and support;
- elder-assist programs that provide awareness and understanding for older adults about their health conditions, the hospital, and the healthcare system;
- decision-making and capacity-building support; and
- day-to-day activity support.

(Huang *et al.*, 2011; WHO, 2015)

Successful implementation of age-friendly initiatives is supported by interdisciplinary consultation, co-management of services for older adults, and coordination of outpatient and/or chronic care programs and services (AHMAC, 2004; Huang *et al.*, 2011). In the case of age-friendly hospitals, integration and coordination with funding and policy bodies are also beneficial (Huang *et al.*, 2011). Furthermore, these processes can be supported by input from relevant stakeholders, including older adults (WHO, 2015).

**5.3.2 Technology-Enabled Infrastructure**

Networks of machines and devices that communicate online, coupled with intelligent analytics (Internet of Things, or IoT), are beginning to provide better traveller experiences, both within terminals/stations and on board transport vehicles (Morris, 2016). The London City Airport assessed the possible impact of IoT in a pilot project. They found that using IoT supported asset tracking (e.g., airport equipment, such as steps used to board smaller aircraft), better on-time arrival and departure performance, greater traveller convenience through services such as apps for pre-ordering food, and airport planners who benefited from data on traveller movement through the airport (BlueSky, 2015; Burrus, 2017).

It is already known that IoT can increase accessibility for those with disabilities (Blouin, 2014), and in the future may improve the accessibility of the transportation system. Examples of potential benefits could include easier check-in processes, shorter lines, and personalized travel experiences while on board the transport vehicle (Morris, 2016). IoT-enabled infrastructure that uses inclusive design elements can create accessible, enabling environments for those with a range of abilities. The potential for IoT to support inclusive transportation further demonstrates the importance of access to wireless connectivity, as discussed in Chapter 4. Given the speed at which technologies are developing, R&D and innovation that helps the transportation system take advantage of new technologies (e.g., artificial intelligence, autonomous vehicles) is important, as is a continual examination of what technologies are on the horizon.

The needs and preferences of older travellers must be considered in discussions about the development of digital technology. While some IoT advancements do not require input from transportation system users (e.g., better scheduling of departure times results in fewer flight delays; more data on traveller movement allow for less walking between gates), others will most likely require that the traveller own a smartphone or tablet and have unlimited connectivity. It is important that future technological innovations not be a prerequisite for accessing the transportation system in order to take into account the preferences of those who do not use technology.

## **5.4 ADVANCING POLICY**

The implementation of transportation solutions is made more challenging by the involvement of a range of stakeholders, including multiple orders of government and transportation service providers and operators. Several approaches can be taken at the federal level to help overcome these challenges and create a more inclusive Canadian transportation system. These include making changes to how transportation is governed at the federal level, adopting a multisectoral and collaborative approach to drafting new regulations, and tying funding to accessibility requirements.

### **5.4.1 Changes in Transportation Governance**

The federal government's authority over the transportation system was outlined in Chapter 2, along with a summary of the recommendations related to accessibility that came out of the most recent *Canada Transportation Act Review* (the Review) (Box 2.1). Of note, these recommendations pertain to accessibility for people with disabilities in general, and none relate specifically to older adults. Many of these recommendations deal with expanding the powers and role of the CTA in dealing with accessibility issues. Most notably, the CTA relies primarily

on codes of practice rather than regulations to establish minimum standards for transportation service providers (GC, 2015b). The Review found that enshrining voluntary codes of practice in legislation would result in greater and more consistent accessibility standards (GC, 2015b). This opinion is shared by Baker (2006) who, in a report to the CCD, states that “international experience demonstrates that all jurisdictions in Europe and the United States have arrived at the conclusion that mandatory regulations, based on the American model, are the only way to resolutely, equitably and efficiently introduce full accessibility over a reasonable period of time.”

The Review also recommends that the CTA be given an exclusive mandate to deal with accessibility issues in the transportation system. Under its current mandate, the CTA shares complaint resolution authority with the Canadian Human Rights Commission (CHRC). While the CTA is only able to resolve formal accessibility violation complaints, the CHRC can aid in resolution of complaints related to pain and suffering by referring passengers to the Canadian Human Rights Tribunal (CHRT) (GC, 2015b). This shared authority leads to inconsistencies in resolutions and difficulties in complaint resolution practices, including the tendency for rejected CTA complaints to then be presented to the CHRT; these issues could be avoided by allowing the CTA sole authority over complaint resolutions (GC, 2015b). Another regulatory limitation faced by the CTA is its inability to proactively investigate and act on systemic issues. Currently, action is taken in response to individual complaints, but cannot be applied on an industry-wide basis. The Review recommends that the CTA be granted the ability to launch investigations on such systemic issues in the absence of individual complaints to improve the efficiency and consistency with which accessibility issues can be addressed (GC, 2015b).

The Review notes that there is a systemic lack of accessibility measures and accountability under the current structure of transportation accessibility governance (GC, 2015b). Enshrining accessibility standards in legislation requires transportation bodies to provide proof of adherence to accessibility standards. Improved accountability efforts can therefore ensure compliance with regulated standards while providing measures of progress and best practices and identifying ongoing needs (GC, 2015b). The Review also recommends that the CTA report on “the status of accessibility” every three years to ensure transparency related to a range of accessibility elements, including best practices, compliance rates, and the number of complaints received (GC, 2015b).

The Review states a need to be clear about the importance of accessibility within the *Canada Transportation Act* itself (GC, 2015b). This view is illustrated through recommendations to incorporate a formal definition of *disability* within the Act

and to make an amendment to clearly reflect the importance of “access for all persons, including those with disabilities” (GC, 2015b). Being clear about requirements can bring about positive change, as shown through benefits achieved in Ontario as a result of the *Accessibility for Ontarians with Disabilities Act* (AODA) (Gov. of ON, 2005), and the AODA’s standards for accessibility, known as the *Integrated Accessibility Standards Regulations* (GC, 2015b). These standards have led to improved accessibility throughout Ontario’s regional GO Transit System and the Toronto Transit Commission (CCD, 2016).

While the regulation recommendations of the CTA review remain open for public comment, the Panel notes that updates to the *Canada Transportation Act* could support a more inclusive transportation system, and that there is an opportunity to specifically include accessibility for older adults within the new accessibility legislation. Importantly, the recommendations set out by the Review, as well as the regulations and codes of practice governed by the CTA, relate to accessibility for people with disabilities and do not refer to older adults. Another relevant activity currently underway by the federal government include the development of comprehensive accessibility legislation (as discussed in Chapter 2). The introduction of this legislation provides an opportunity to highlight the importance of meeting the needs of older adults in federal structures, such as the federal transportation system.

#### **5.4.2 Multisectoral, Collaborative Efforts in Crafting Regulations**

Several non-federal government stakeholders can support effective transportation governance, including service providers and operators; not-for-profit or non-governmental organizations; and provincial, territorial, and municipal governments. Taking a meaningful, multisectoral, collaborative approach when developing regulations integrates the views and expertise of a range of stakeholders in the drafting process. The Panel notes that effective stakeholder engagement processes often focus on developing trust and respect among stakeholders and, even if consensus is not reached, these discussions can still inform the development of formal regulations. For example, the ACCESS Advisory Committee of the U.S. Department of Transportation (DOT) was established to manage and develop proposed rules for accommodations for air travellers with disabilities, such as those “addressing in-flight communications, accessible lavatories on new single-aisle aircraft, and service animals” (DOT, 2016b). The ACCESS Advisory Committee provided recommendations through a consensus-based process, with committee members representing a number of aviation stakeholders (DOT, 2016a) (Box 5.4). The DOT plans to issue a notice of proposed rulemaking in 2017 based on the agreements reached (DOT, 2016b).

**Box 5.4****Recommendations of the ACCESS Advisory Committee**

The DOT ACCESS Advisory Committee's purpose was to "negotiate and develop a proposed rule concerning accommodations for air travellers with disabilities" related to three specific issues: accessible lavatories on new single-aisle aircraft, in-flight communications and entertainment, and service animals. The ACCESS Advisory Committee was multidisciplinary and intersectoral, with representatives from air carriers, disability and advocacy groups, carrier and flight attendant groups, and other aviation stakeholders, and used a consensus-based approach.

Currently, passengers in wheelchairs cannot use lavatories on single-aisle aircraft, and therefore must avoid consuming liquids during air travel, or avoid flying altogether. The recommendations of the ACCESS Advisory Committee include both short- and long-term actions that can be taken to address the needs of travellers with mobility impairments and offer accessible in-flight lavatories in the future. Recommendations included training flight attendants to assist with lavatory use, mandatory toilet seat height and assist handles, and visual barriers for cases when the lavatory door must remain open. As well, the DOT was advised to further improve the design of onboard wheelchairs to ensure sufficient over-the-toilet capabilities.

At present, airlines do not generally provide in-flight entertainment with captioning or audio descriptions. The ACCESS Advisory Committee recommended that some in-flight movies and television shows have captioning to provide access to deaf and hard-of-hearing passengers. In addition, the committee recommended that audio-described entertainment be available to allow passengers with visual impairments to listen to the narration of movies and shows. Content that is not closed-captioned or audio-described will be allowed only if it is not available from the airline's content provider. Specifically, the ACCESS Advisory Committee recommendations apply to new aircraft or newly installed entertainment systems on older aircrafts.

The ACCESS Advisory Committee provided their recommendations on accessible lavatories, and in-flight communications and entertainment to the DOT for review and it remains to be seen what regulatory guidance may be produced by the DOT on these issues. The discussions of the ACCESS Advisory Committee on service animals may be considered during the drafting of the final regulations by the DOT even though consensus agreement was not reached on this topic.

(DOT, 2016a, 2016b)

For some Canadian regulatory transportation issues, there is no need to repeat work that has already been done in other countries. The regulations stemming from the ACCESS Advisory Committee may be directly applicable in Canada. Furthermore, Canada's larger air carriers will be bound by these regulations when they fly in and out of the United States. The Panel noted that recommendations and guidelines developed by the ICAO (ICAO, n.d.) could also be used to help guide the development of new regulations in Canada. Importantly, the guidance provided in the ICAO's *Manual on Access to Air Transport by Persons with Disabilities* is consistent with the obligations set out in the United Nations' *Convention on the Rights of Persons with Disabilities* (ICAO, 2013). Having said this, some understanding of Canada's unique governance, environment, and stakeholder context is needed to predict whether an approach will work. That context includes the complicated jurisdictional division over transportation governance, the large number of older adults living in rural and remote communities, climate, and the unique perspective and needs of Indigenous Peoples. R&D and innovation efforts that focus specifically on the applicability and relevance of solutions from other countries may help ensure practices implemented will be effective here.

#### 5.4.3 Tying Funding to Accessibility Requirements

Transportation bodies across all sectors (both private and public) can be incentivized to make practices more inclusive if accessibility stipulations are placed on infrastructure and procurement funds — especially those relevant to seamless door-through-door travel for older adults. The federal government is an important funding body for transport infrastructure in Canada. In 2016, it announced \$27.6 million in funding for 13 regional airports under the Airports Capital Assistance Program (CAC, 2016) and \$867.3 million in Budget 2017 to support the operations and capital requirements of Via Rail Canada (GC, 2017c). It also created the Canada Infrastructure Bank (CIB) in 2017 as part of the Investing in Canada Plan (GC, 2017b, 2017d). One of the CIB's goals is building “communities that are socially inclusive” (GC, 2017b). As such, the Panel believes there is an opportunity for the federal government to tie inclusivity guidelines to CIB-supported projects, thereby developing infrastructure (including transportation infrastructure projects) that supports older travellers.

Another 2017 federal initiative, the Smart Cities Challenge, encourages increased connectivity among municipal transportation modes (GC, 2017a), and therefore presents an opportunity for further inclusive infrastructure development. There is also an opportunity to develop inclusive transportation infrastructure through public private partnerships, whereby public sector funds are tied to accessibility requirements in private sector projects. Ensuring that products and services



supported by government procurement meet strong inclusive requirements would leverage public spending to spread awareness of, and innovation for, inclusive transportation.

There are several international examples of tying funding to specific requirements. The European Structural and Investment (ESI) funds include a set of legal, policy, and institutional requirements called *ex ante* conditionalities that refer specifically to the importance of creating obstacle-free travel for older adults:

Managing authorities shall ensure by means of action throughout programme lifecycles that all products, goods, services and infrastructures that are open or provided to the public and are co-financed by the ESI Funds are accessible to all citizens including those with disabilities in accordance with applicable law, thereby contributing to a barrier-free environment for persons with disabilities and the elderly.

(EU, 2015)

The European Commission is increasingly moving towards tying its funding requirements to an inclusive design approach to accessibility, while moving away from requiring specific solutions to accommodate the needs of people with disabilities (Frye, 2015a). The rationale of this shift is that an inclusive design approach creates an obstacle-free system for all travellers beyond those who are older or who have disabilities (Frye, 2015a). This approach demonstrates that funding requirements need not be limited to narrow accessibility provisions, but could support inclusive transportation on a more general scale. For example, the government has the opportunity to improve or develop transportation hubs that support intermodal travel. Such hubs would allow for easy exchanges between taxis, buses, trains, and airplanes within a single accessible structure.

The approach of tying infrastructure funding to accessibility requirements has been supported by stakeholder organizations such as the CCD, which advocates that the federal government attach specific accessibility requirements to all government procurement activities, infrastructure spending, and subsidies provided to industry (CCD, 2016).

## 5.5 KNOWLEDGE GAPS AND CONCLUSIONS

A shift in culture and the adoption of inclusive design principles can support a Canadian transportation system that welcomes all travellers, as can improved collaboration among stakeholders across sectors. To allow for door-through-door travel, inclusive travel options are needed, including a commitment to changing practices and systems that currently pose obstacles in the existing transportation system. The implementation of inclusive transportation solutions has important implications for Canada's economic and social future that are relevant to various industries and government departments outside TC, such as Health Canada and Infrastructure Canada. For instance, a transportation system that enables greater mobility for older adults could lead to positive health impacts and increased quality of life, as well as increased tourism revenue in Canada.

The system will also need to be adaptive moving forward, anticipating the shifting needs and preferences over time of all travellers, including older adults. In short, implementing existing solutions to address the travel obstacles currently facing older adults in the Canadian transportation system, developing (and improving) new solutions, and developing a culture of continual improvement and adaptation to the changing needs of travellers are all important goals that will improve the inclusivity of the transportation system. To achieve these goals three pathways were identified: advancing human and social resources, advancing infrastructure and technology, and advancing policy. Importantly, each pathway involves a multisectoral approach that involves a range of public and private stakeholders, and encourages continual R&D and innovation support.

# 6

## Conclusion

- Framing the Issue
- The Panel's Vision
- Achieving the Vision
- Final Thoughts

## 6 Conclusion

Recognizing that Canada's transportation system will need to evolve and change to meet the needs of the growing aging population, Transport Canada (the Sponsor) tasked the Panel with answering the following questions:

*How can technology and innovation help the Canadian transportation system (under the legislative authority of Parliament) adapt to the needs of an aging population?*

- *What impact will the aging demographic have on the economics, social role and physical design of the Canadian transportation system over the next 25 years? What is the current state of research on the safety, security, multimodal integration, service standards and equipment design implications of an increasingly elderly travelling public, and where are the gaps in knowledge?*
- *What are the international trends and best practices for accommodating an aging population, including trends and best practices for measuring performance?*
- *Are there examples or case studies where new technologies and innovative solutions are being developed to accommodate increasing numbers of aging travellers, such as equipment, communications, business practices, processes and training?*

At the beginning of the assessment process, the Panel met with the Sponsor to acquire a full understanding of the charge and to receive further direction. The Sponsor presented an additional five questions intended to clarify which issues should be addressed in the report. These questions were not intended to replace the charge above, but rather provide guidance on the key areas of focus for the Panel's deliberations. These supporting questions are:

- *How can Transport Canada (TC) support integrated, seamless movement across the transportation network (door-through-door)?*
- *What physical, design, economic, and social barriers limit the access of seniors to the national transportation system?*
- *Do people change the way they interact with the transportation system as they age? What impact does this have on modal choice?*
- *What impact (positive or negative) do new technologies have on the transportation experience of seniors?*
- *Which specific international and/or domestic innovations could be applied in the Canadian transportation context and what impact will these have on seniors?*

## 6.1 FRAMING THE ISSUE

The aging process affects different individuals in different ways. Older adults in Canada are a heterogeneous group with a wide range of preferences, needs, economic profiles, and physical, sensory, social, and cognitive abilities. The focus of this report is not on specific chronological ages, nor on disability, but rather on older adults in general. While the Panel did consider disability and physical accessibility issues, it also examined other issues related to aging, including quality of life and ageism.

Older adults, defined by the Panel as those aged 65 or older, are a significant demographic in Canada with a faster rate of population growth than any other subgroup. As this demographic grows, the need to adapt the federal transportation system to meet the needs of older adults will increase, presenting opportunities for infrastructure investments, development of new technologies and processes, and changes to the governance of transportation and accessibility in Canada. It is an ideal time to work towards creating a Canadian transportation system that minimizes obstacles for older travellers through collaboration among federal departments, other orders of government, the transportation industry, academia, and stakeholder groups, including older travellers. Transport Canada has an opportunity to be a leader in bringing about an inclusive, age-friendly transportation system, given its important role in providing direction and governance for transportation in Canada.

## 6.2 THE PANEL'S VISION

The Panel envisions a Canadian transportation system that considers the unique needs and preferences of older adults and supports seamless, multimodal, door-through-door travel — travel that allows older adults to plan their trip from home, move from their homes into transport vehicles (and possibly between vehicles) through venues such as train stations and airports, and finally through the door of their chosen destination. This envisioned system would minimize physical, visual, auditory, social, and cognitive obstacles, and promote social equity and connectedness. Creating such a system for older adults would benefit all people in Canada by making travel easier for everyone.

For older adults, both transportation to meet essential needs and discretionary travel for pleasure and to visit friends and family are important. Notably, discretionary travel improves the health, social inclusion, and quality of life of older adults. An inclusive Canadian transportation system will enable more older adults to engage in both essential and discretionary travel, improving their overall well-being, while promoting social equity. Furthermore, the economic benefits generated by increasing tourism by older adults using

accessible transportation infrastructure may be significant because, in many ways, older travellers are ideal customers; those who do travel tend to take more overnight trips and spend more money compared to younger travellers. Retired people have the opportunity to travel frequently, for long stretches, outside peak times, and may travel with others more often, as part of a familial unit or in groups of peers.

### **6.3 ACHIEVING THE VISION**

There are obstacles present at every stage of a door-through-door journey in Canada that make it challenging for older adults to travel. Obstacles are linked to a range of factors including ageism, travel preferences, physical, sensory, social, and cognitive abilities, geographical location, and income. The Panel identified national and international examples that minimize these obstacles and support the vision for an inclusive transportation system. Generally, examples that support inclusive transport take into account the diversity of older adults; they include technological innovations but also changes to infrastructure and human services. The Panel acknowledges that there are challenges with the inclusive approach, including design cost, moving population targets (as characteristics of groups change over time), and integration of new innovations.

While there are opportunities available to help minimize some of the obstacles facing older travellers, integration of these practices in the Canadian transportation system is not a given. Based on a review of knowledge and practices in transportation and other sectors, the Panel identified three pathways, advancing human and social resources, advancing technology and infrastructure, and advancing policy. These pathways aim to support:

- the implementation of opportunities to address travel obstacles currently facing older adults in the Canadian transportation system;
- the development of new (and the improvement of existing) opportunities; and
- the development of a culture of continual improvement and adaptation to meet the needs of all travellers.

Intersectoral and interdisciplinary R&D and innovation is an important component of each of the pathways, as it supports the development, testing, implementation, and evaluation of the innovations and practices that underlie each pathway, which are outlined below:

#### **Advancing Human and Social Resources**

The human interactions that occur on a journey are important for all travellers, and may be of particular importance for older adults. Effective customer service that meets the needs of transportation consumers helps support autonomy and

independence. Targeted and mandatory sector-wide inclusivity training that is monitored for efficacy may encourage inclusive service and assistance for older travellers. Additionally, initiatives that educate users about available services may improve travel experiences by ensuring people are aware of and able to use travel supports (e.g., those related to health and accessibility). This type of education may be particularly beneficial during trip planning as it may give some travellers greater confidence to undertake a journey.

### **Advancing Technology and Infrastructure**

Consistently adopting the principles of inclusive design, which considers the range of human diversity in terms of age and ability, can help ensure that the built environment is better suited for everyone, including older adults. Importantly, inclusive design supports a big-picture approach by focusing on the accessibility of infrastructure as a whole, as opposed to its individual components. By taking an inclusive design approach from the start, modifications can be avoided later and separate systems are not required for people with different sets of needs. Inclusive design can also involve modifications to existing infrastructure.

Technology is also opening the door to new opportunities in transportation infrastructure, and new innovations are beginning to provide better traveller experiences, both within terminals/stations and on board transport vehicles. The needs and preferences of older travellers should be considered during both the development and implementation of digital technology opportunities. At no point should future technological innovations become prerequisite for accessing the Canadian transportation system in order to ensure it remains available to those travellers who do not use technology.

### **Advancing Policy**

Policy can help support the development of an inclusive Canadian transportation system that meets the needs of older adults. It is an ideal time for the federal government to look closely at policy, while it is developing a long-term agenda for transportation in Canada, which includes examining the current approach to transportation governance. As part of this process, the government has the opportunity to consider what changes will help the Canadian transportation system adapt to better meet the needs of older adults. For example, moving from federal codes of practice for accessibility to regulations may support a more inclusive transportation system.

While the federal government and Transport Canada in particular have the potential to play a central role in achieving an inclusive transportation system through governance changes, the inclusion of non-federal government stakeholders in governance processes can lead to more effective transportation

policy. For example, a multi-stakeholder group that includes all orders of government, transportation service providers and operators, and not-for-profit entities, specifically tasked with moving forward in ensuring the inclusivity of the Canadian transportation system, could help realize many of the opportunities outlined in this report. The inclusion of older adults themselves as transportation stakeholders is particularly important to ensure their needs and preferences are considered.

One important and powerful lever held by the federal government is the provision of funding for transportation infrastructure and other initiatives. The federal government therefore has an opportunity to encourage the development of an age-friendly transportation system by tying infrastructure and other investments to projects that support inclusive, multimodal transportation. Funding requirements need not be limited to narrow accessibility provisions, but can be used to broadly support inclusive transportation. For example, the federal government has the opportunity to improve or develop transportation hubs that support intermodal travel. It can also use procurement to support the development of new technological or other innovations that promote the inclusivity of the transportation system.

#### **6.4 FINAL THOUGHTS**

Adapting the Canadian transportation system to meet the needs of older travellers will, in the process, support seamless, multimodal, door-through-door travel that has benefits for everyone in Canada, both residents and visitors. The benefits of creating such a system include improved social equity and economic opportunities, as more people, including older adults, will be able to travel. An inclusive system should be based on collaboration with a number of stakeholders, including all orders of government, the transportation industry, and older travellers themselves. Understanding the needs and preferences of the growing population of older adults in Canada is important for achieving this goal, as is the creation of a transportation system that can adapt as these needs and preferences shift over time. It is an ideal time for Canada to move forward and work towards a fully inclusive transportation system, while the federal government is engaged in initiatives to improve Canada's transportation infrastructure, and while it is reviewing how transportation and accessibility are governed. The need for a transportation system that minimizes obstacles for older travellers is only going to grow. To reap maximum benefits, the time to act is now.



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**Appendix**  
**Accessible Transportation Standards:**  
**Canada, the United States, and the**  
**European Union**



## **Appendix**

### **Accessible Transportation Standards: Canada, the United States, and the European Union**

The Canada Transportation Act Review (GC, 2015b) involved the submission of numerous reports from consultants, independent research organizations, university institutes, and individual researchers. Several of these compared Canadian approaches to accessible transportation with those of the United States or the European Union (Ashby, 2015; CBS, 2015; Frye, 2015a, 2015c). Detailed comparison tables can be found in these reports — as well as in the Review itself (GC, 2015b, 2015d) — covering discrepancies and similarities in specific standards (e.g., those for accessible washrooms). This appendix reviews some of the broader differences and similarities in accessibility standards between these three jurisdictions.

#### **Regulations vs. Codes**

As discussed in Chapter 2, the majority of Canada's transport accessibility standards are set by voluntary codes of practice rather than regulations. These codes are developed following extensive consultation with industry and representatives from disability associations. Although they cannot be enforced in the same way that regulations can, compliance is expected (Frye, 2015a). In contrast, both the United States and the European Union do not use codes of practice, and instead (for the most part) govern accessibility with mandatory, legally binding regulations (GC, 2015b). In the European Union, these are divided into technical (construction) regulations and passenger rights regulations, which are often supplemented with domestic guidance documents provided by individual Member States to help clarify requirements and assist with their implementation. Like codes of practice, these guidance documents are not enforceable by law, but could be considered in formal legal proceedings (Frye, 2015a).

#### **Scope of Federal Authority for Different Transportation Modes**

Comparisons of accessibility standards for bus travel are more complex than they are for other modes. In Canada, local transportation systems such as subways and city bus lines are under municipal or provincial, rather than federal, jurisdiction, so they are not covered by the voluntary Intercity Bus Code. As the only province with a disabilities act, Ontario has the power to enforce accessibility requirements for transportation modes that are provincially regulated. In contrast to those in Canada, regulations in the United States apply not only to interstate and international transportation, but also to local transportation, which means, for example, that bus systems in all States are subject to the same mandatory accessibility requirements (Ashby, 2015). Similarly, in the European Union, the detailed technical standards for accessibility apply to local buses, ensuring

consistency across all Member States. Intercity buses are currently not required to be accessible, but if an EU Member State decides on its own to make them accessible, it must follow the EU technical regulations. Adding another layer of complexity, passenger rights regulations for bus users in the European Union only apply to long-distance bus services (journeys over 250 kilometres) (Frye, 2015c).

Comparing rail accessibility standards is a fairly straightforward exercise. Although there are differences in the specific details, standards are quite similar across Canada, the United States, and the European Union; however, the latter two jurisdictions have the direct force of law, whereas they are contained in voluntary codes of practice in Canada (Ashby, 2015; Frye, 2015a).

With respect to air travel in Canada, and although technical accessibility standards are again covered by a code, service standards are governed by one of the only two mandatory accessibility regulations, the Air Transportation Regulations, Part VII (Frye, 2015c). These regulations apply only to domestic services operated by an air carrier (GC, 2012), whereas American regulations cover international and domestic services provided by U.S. carriers and service to and from the United States by foreign carriers (Ashby, 2015). The situation in the European Union mirrors the one in Canada in that technical access features aboard aircraft are not legally required, but are instead guided by the European Civil Aviation Conference; service standards are set out in passenger rights regulations (Frye, 2015c).

Accessibility standards for ferries are governed by voluntary codes in Canada, but the provisions in these codes are more comprehensive than the mandatory regulations set forth by the United States and the European Union. For example, in the United States, while passenger services are addressed, there are no physical accessibility standards for vessels. However, the U.S. regulations apply to all types of passenger vessels, not just ferries (Ashby, 2015). Similarly, although there is a mandatory construction directive for ferries in the European Union, it is quite broad and not useful for dealing with accessibility needs. In contrast, the passenger rights regulations for ferry services are more robust (Frye, 2015c).

Finally, passenger terminal accessibility is covered by a single code of practice in Canada and a variety of regulations in the United States, whereas the European Union has no authority in this matter, with the exception of some legal requirements for passenger rail terminals. Instead, Member States are responsible for this legislation (Ashby, 2015; GC, 2015d).

### Technical Standards

The CTA generally fails to include design and construction standards in its voluntary accessibility codes, but suggests that users refer to the principles of universal design or the Canadian Standards Association's design standards. In contrast, both the United States and the European Union accessibility regulations contain detailed technical requirements, which have received strong support from industry in the European Union, in part because they were consulted during the development of these regulations (CBS, 2015; Frye, 2015a).

### Monitoring and Enforcement

In North America, federal agencies — the CTA in Canada, and the Departments of Transportation (DOT) and Justice (DOJ) in the United States — enforce compliance with regulations and perform monitoring activities (GC, 2015b). European Union law operates under the principle of subsidiarity, which states that “the EU should only act if the objectives of the proposed action cannot be sufficiently met by the Member States, and can be better achieved by the EU” (U.K. Government, 2014). Thus, although regulations apply to the entire European Union, they are often implemented and enforced by Member States. This is the case for accessible transportation standards, where technical regulations are enforced at the point of licensing, and passenger rights regulations are monitored and enforced by bodies designated for each Member State (Frye, 2015a; GC, 2015b).

### Dispute Resolution

In the United States, “the DOT has authority to investigate potential violations of its requirements on its own initiative” (CBS, 2015). Furthermore, decisions based on enforcement investigations set industry-wide precedence. This is not the case in Canada, where an investigation is only performed when a complaint is lodged, and any decision applies only to the carrier(s) implicated by the initial complaint. As a result of these differences, the United States is in a better position to review systemic problems (CBS, 2015). In the European Union, dispute resolution is left to Member States, resulting in some wide variation in penalties for infringement, but as with the United States, “if cases are taken through the courts, case law will be established and precedents set” (Frye, 2015a).

Council of Canadian Academies’ Reports of Interest

The assessment reports listed below are accessible through the CCA’s website ([www.scienceadvice.ca](http://www.scienceadvice.ca)):



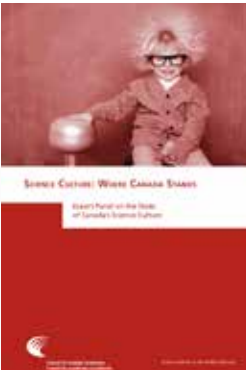
Strengthening Canada's Research Capacity: The Gender Dimension (2012)



Aboriginal Food Security in Northern Canada: An Assessment of the State of Knowledge (2014)



The Value of Commercial Marine Shipping to Canada (2017)



Science Culture: Where Canada Stands (2014)



Enabling Sustainability in an Interconnected World (2014)



Accessing Health and Health-Related Data in Canada (2015)

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